

# KIC 005481285

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005481285-01	OBS	No	3.172183	131.850482	130.3	6.535	11.2	12.3	1.11	6370	2.54	922.17
005481285-02	OBS	No	325.691006	300.549040	609.0	12.072	10.9	6.6	1.11	6370	2.78	1.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005481285-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
005481285-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

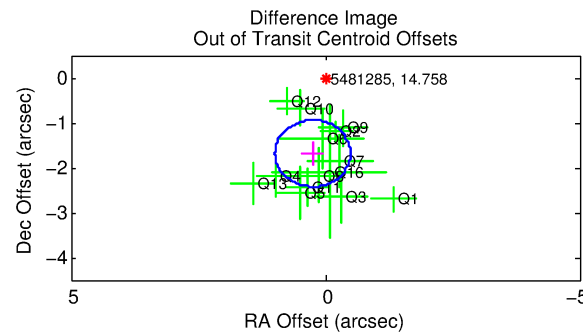
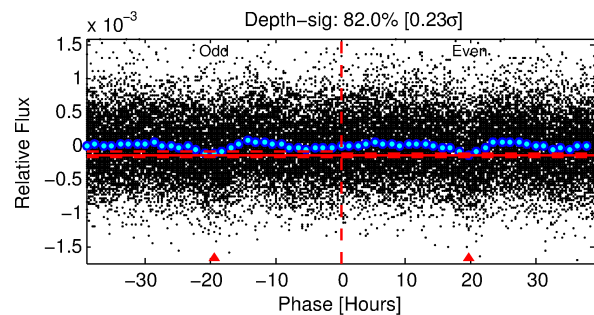
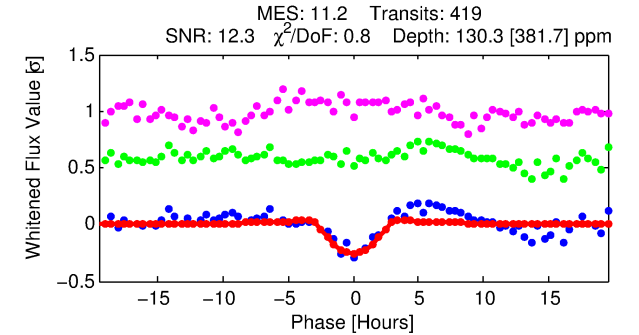
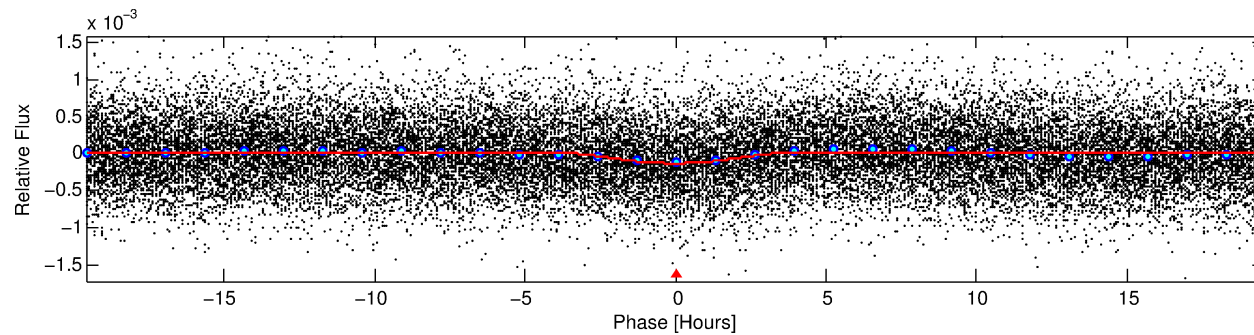
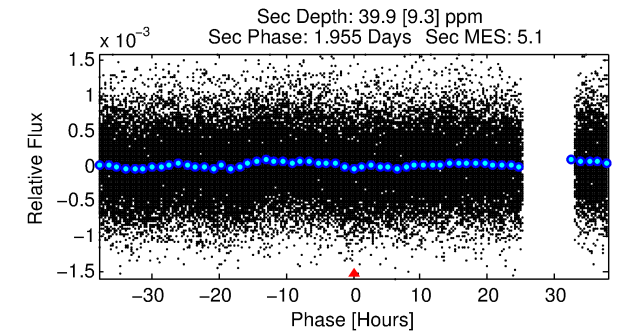
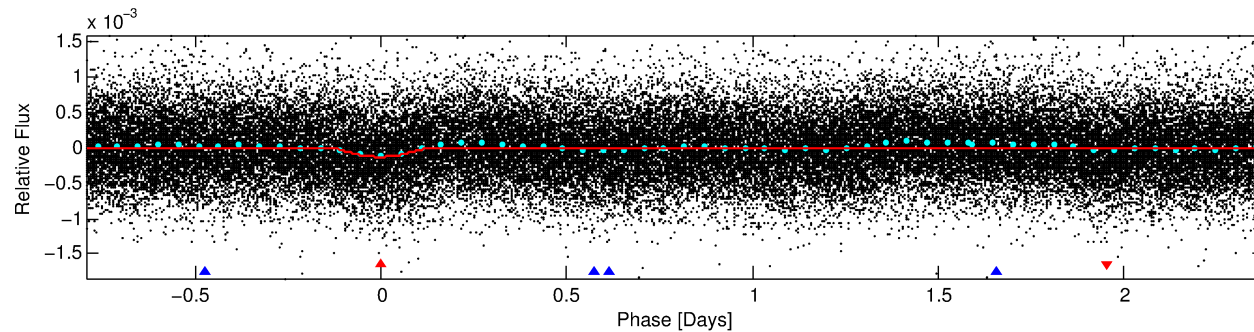
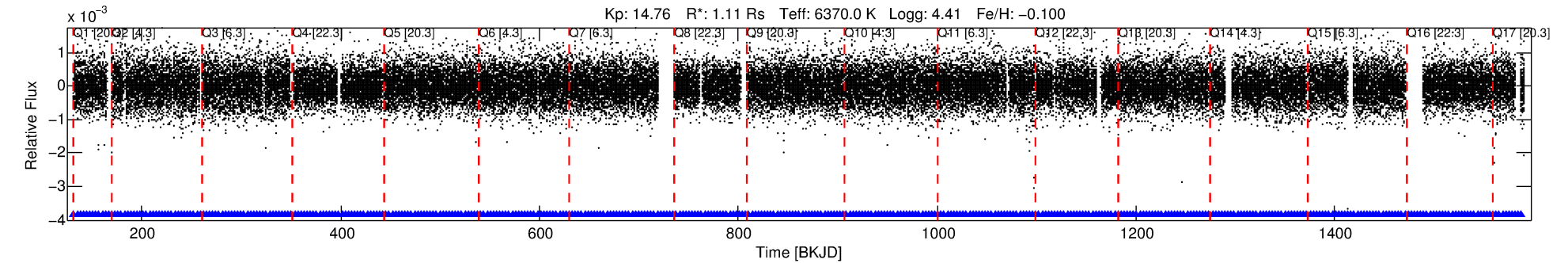
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005481285-01

No Significant Match Found

# DV One-Page Summary

KIC: 5481285 Candidate: 1 of 2 Period: 3.172 d



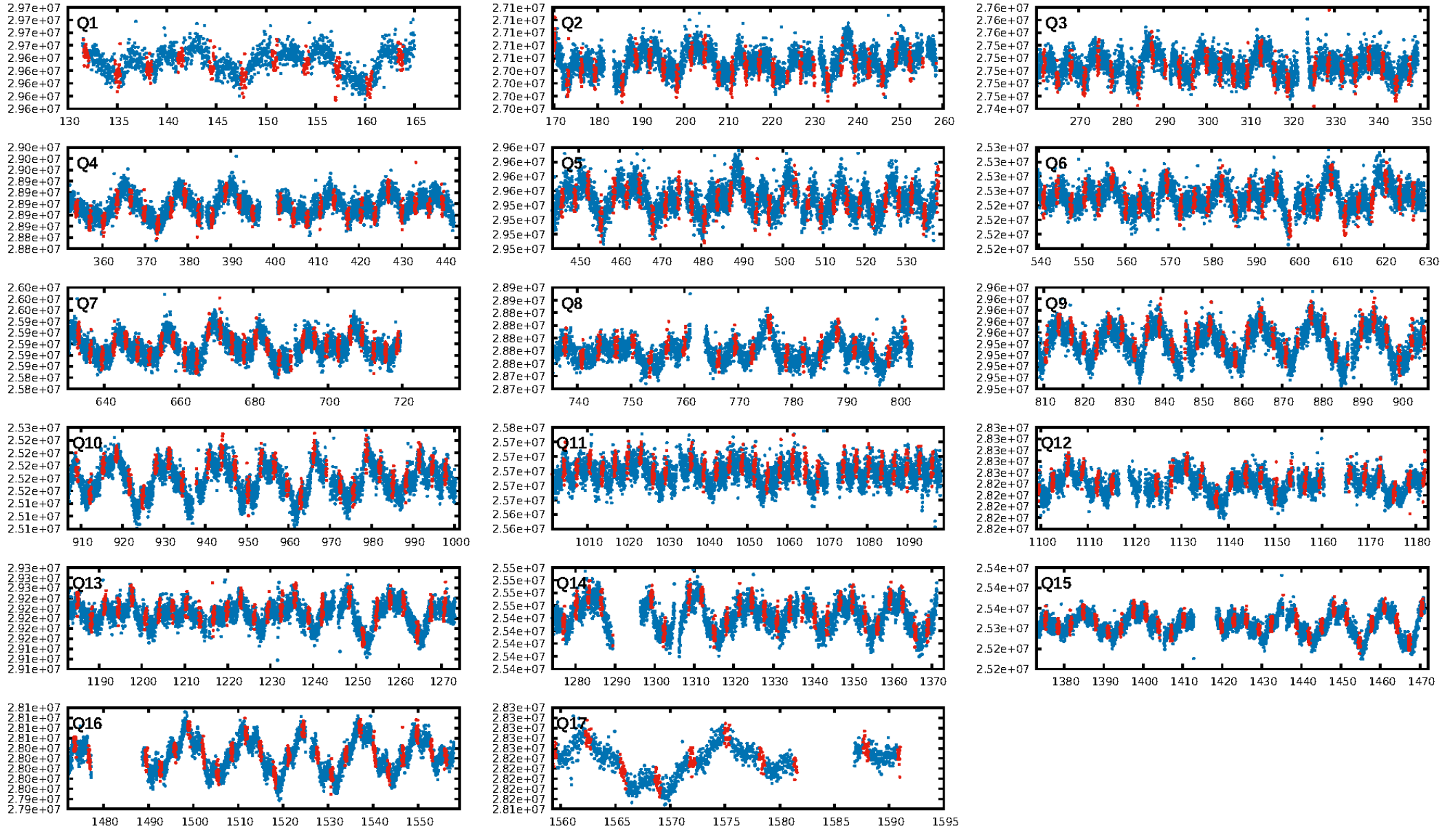
## DV Fit Results:

Period = 3.17218 [0.00004] d  
Epoch = 131.8505 [0.0104] BKJD  
Rp/R\* = 0.0211 [0.0533]  
a/R\* = 1.26 [0.27]  
b = 1.00 [0.12]  
Seff = 922.17 [375.35]  
Teq = 1405 [143] K  
Rp = 2.54 [6.49] Re  
a = 0.0442 [0.0120] AU  
Ag = 6.65 [33.83] [0.17σ]  
Teffp = 3489 [4426] K [0.47σ]

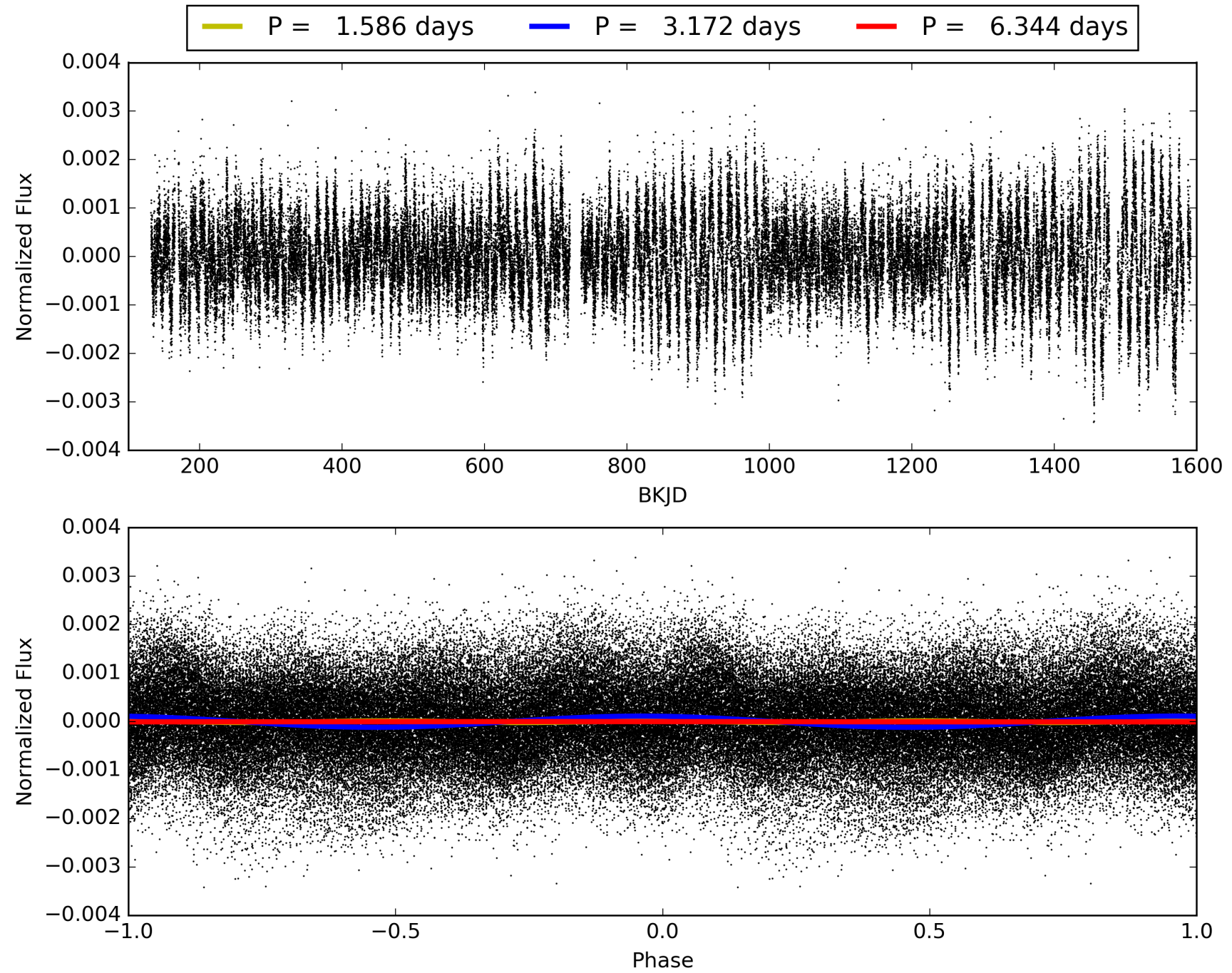
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [563.87σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.42e-27  
RollingBand-fgt: 1.00 [398/398]  
GhostDiagnostic-chr: 5.518  
Centroid-sig: 0.0%  
Centroid-so: 1.341 arcsec [2.43σ]  
OotOffset-rm: 1.702 arcsec [6.88σ]  
KicOffset-rm: 0.480 arcsec [2.30σ]  
OotOffset-st: 3/3/4/4 [14]  
KicOffset-st: 3/3/4/4 [14]  
DiffImageQuality-fgm: 0.93 [13/14]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 005481285-01, PDC Light Curves



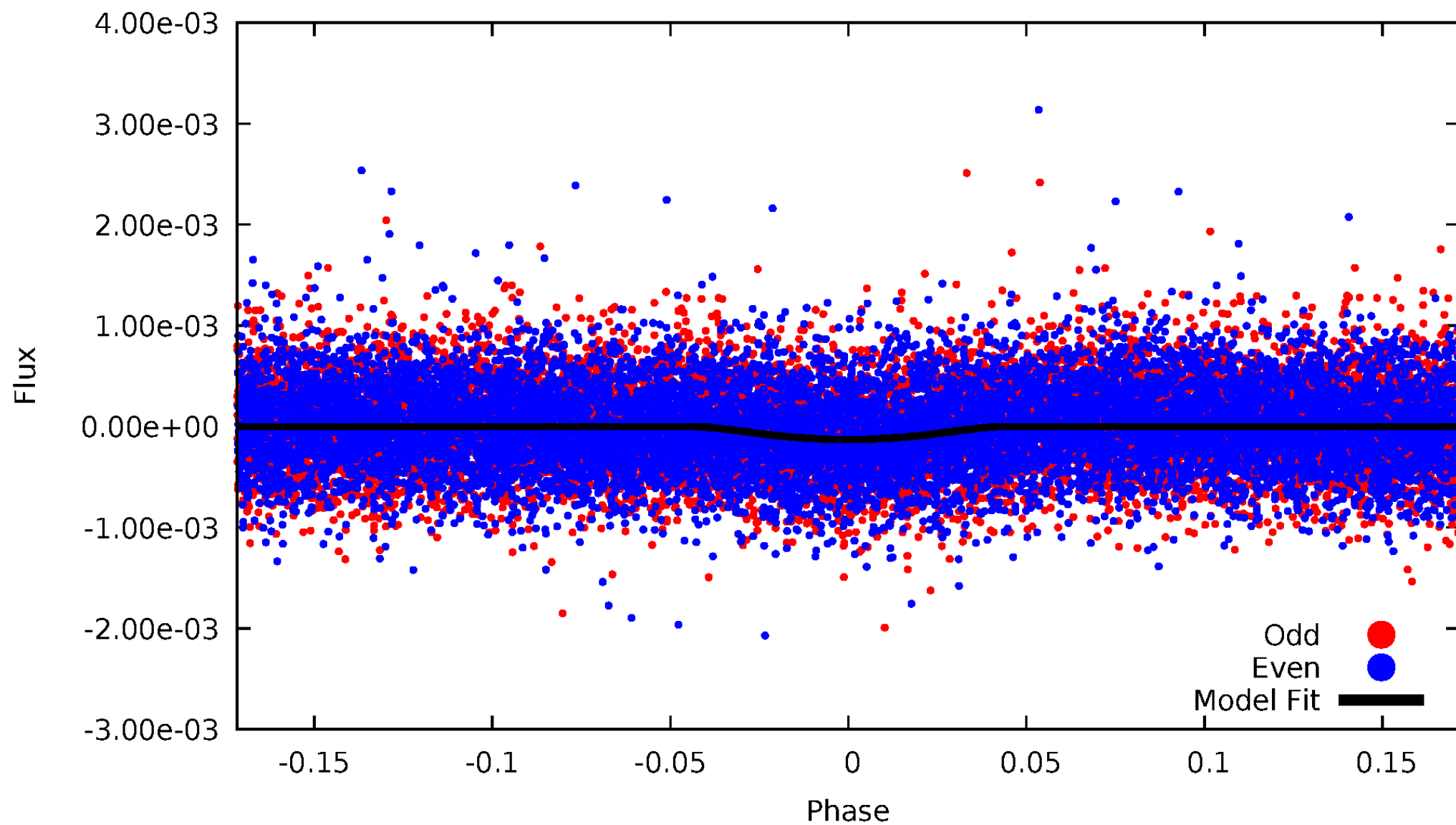
TCE 005481285-01





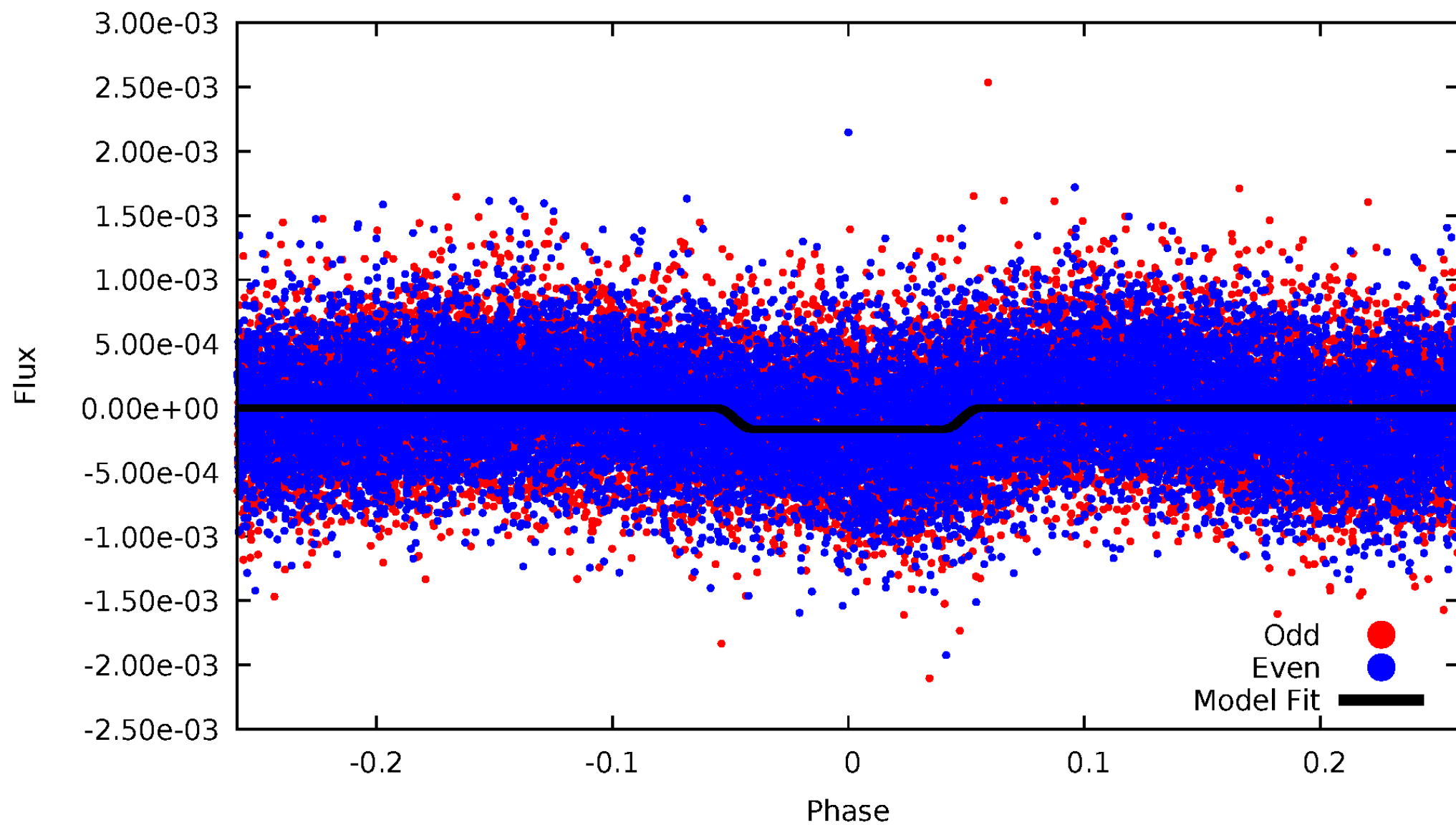
# DV Odd/Even

TCE 005481285-01

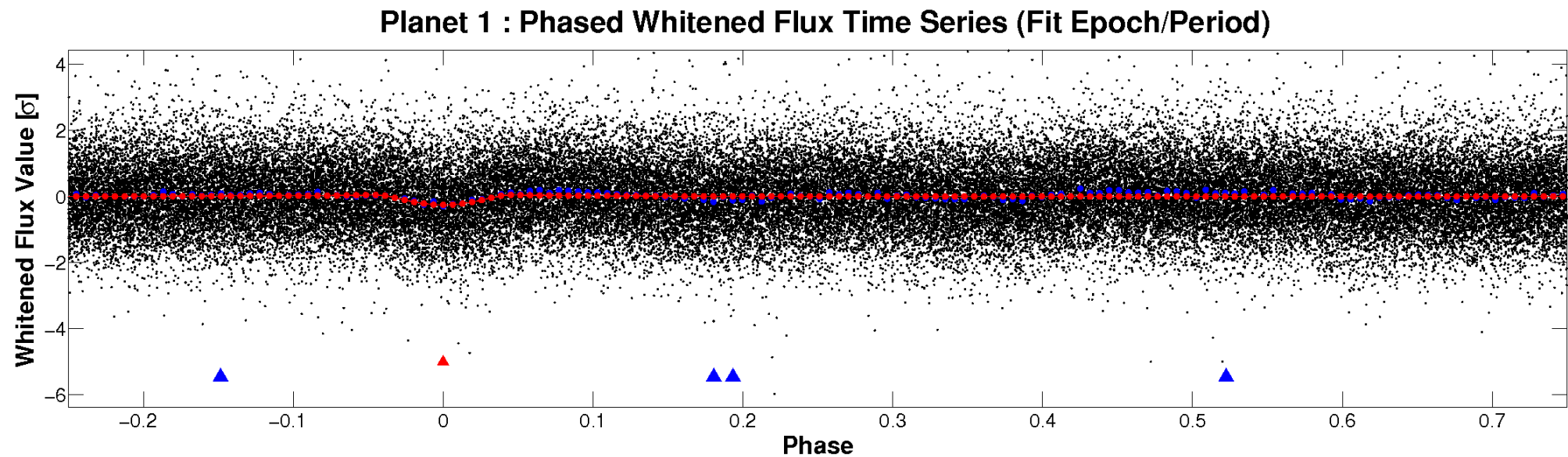
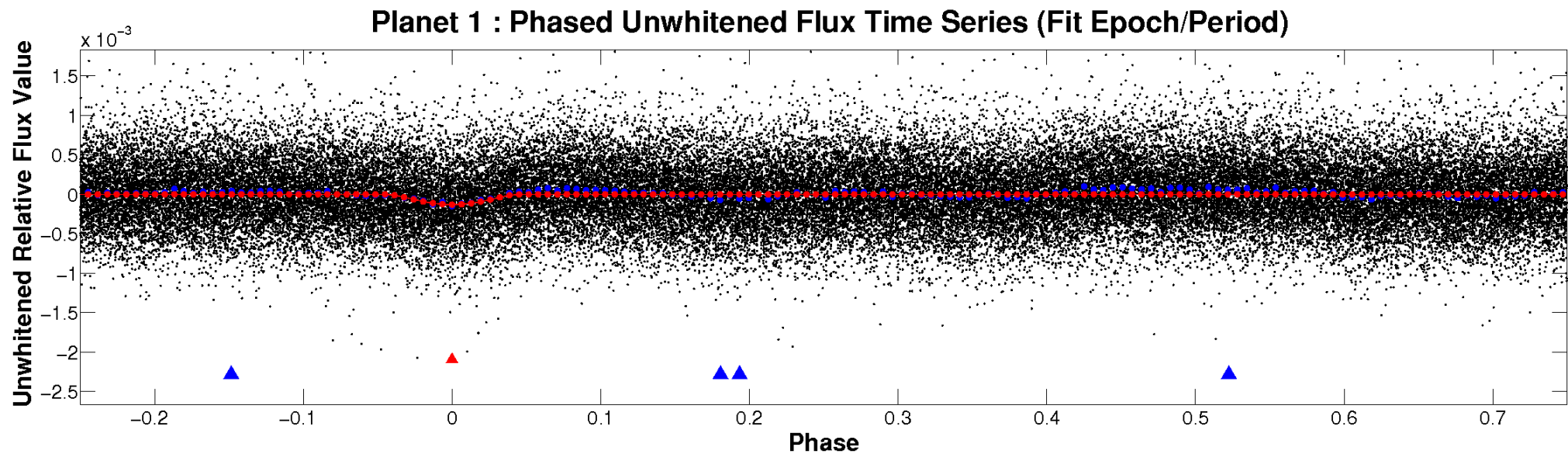


# ALT Odd/Even

TCE 005481285-01

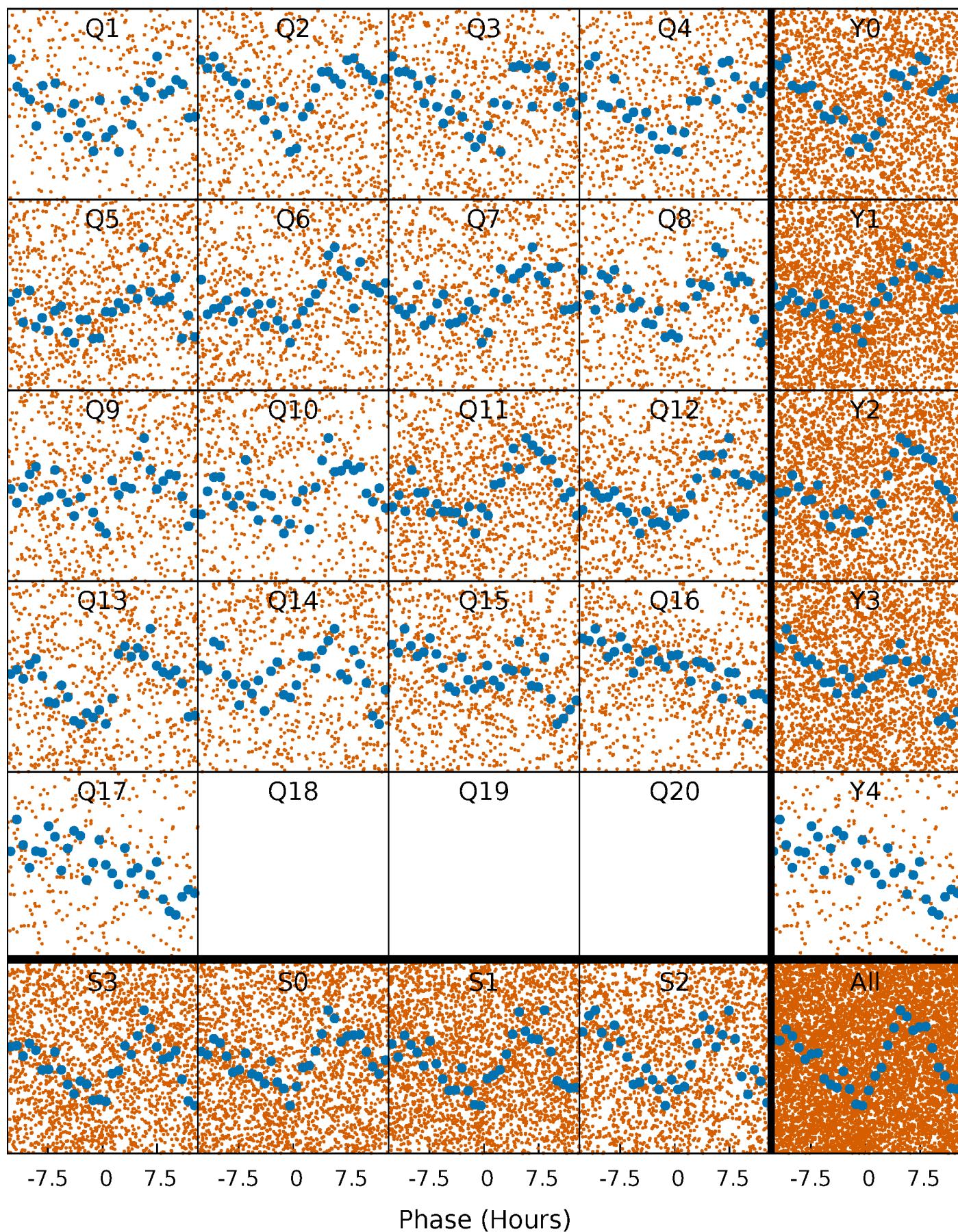


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

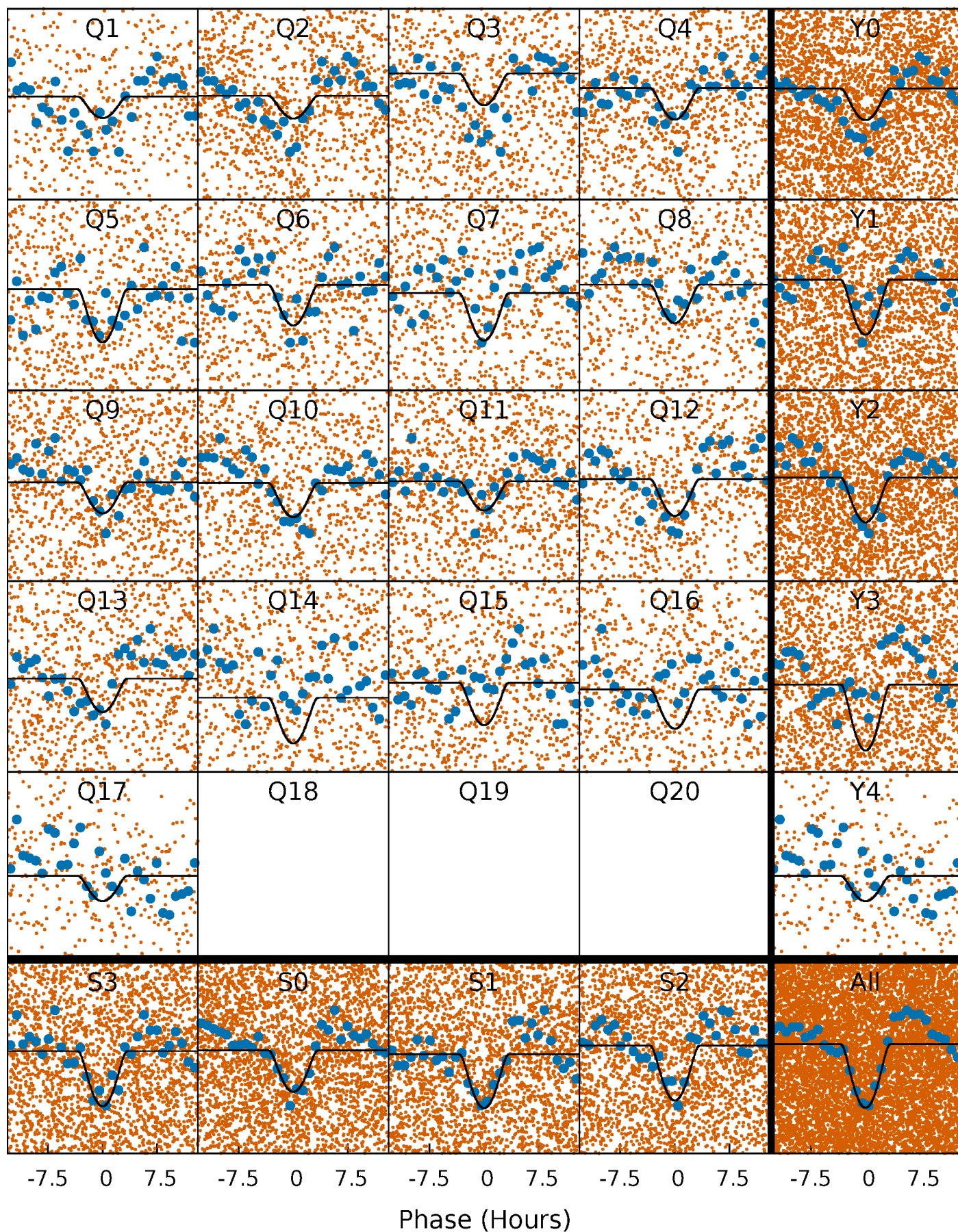
TCE 005481285-01 P= 3.172183 Days  $T_0=131.850482$  (BKJD)





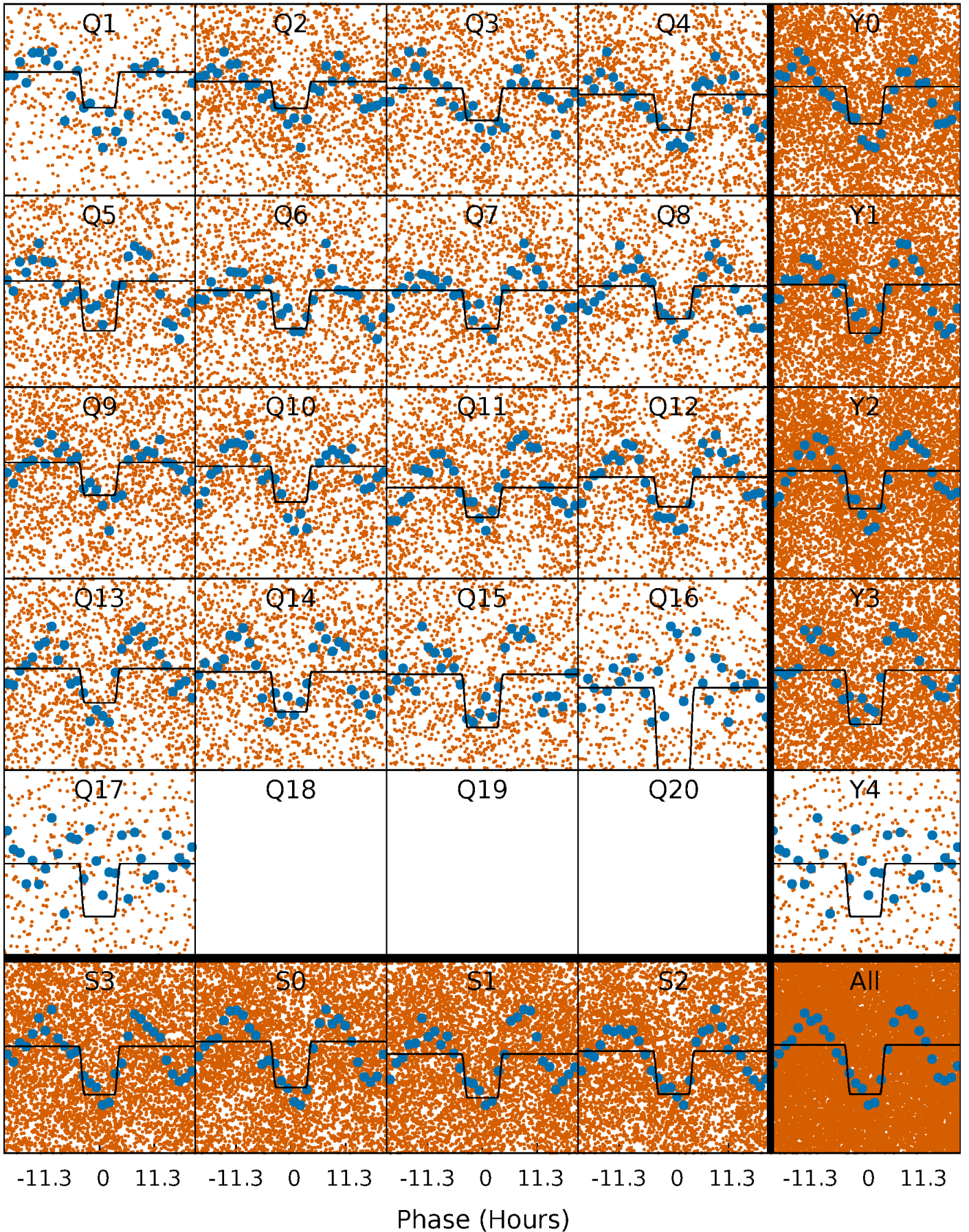
# DV Quarter-Phased Transit Curves

TCE 005481285-01 P= 3.172183 Days  $T_0=131.850482$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005481285-01 P= 3.172225 Days  $T_0=131.764326$  (BKJD)

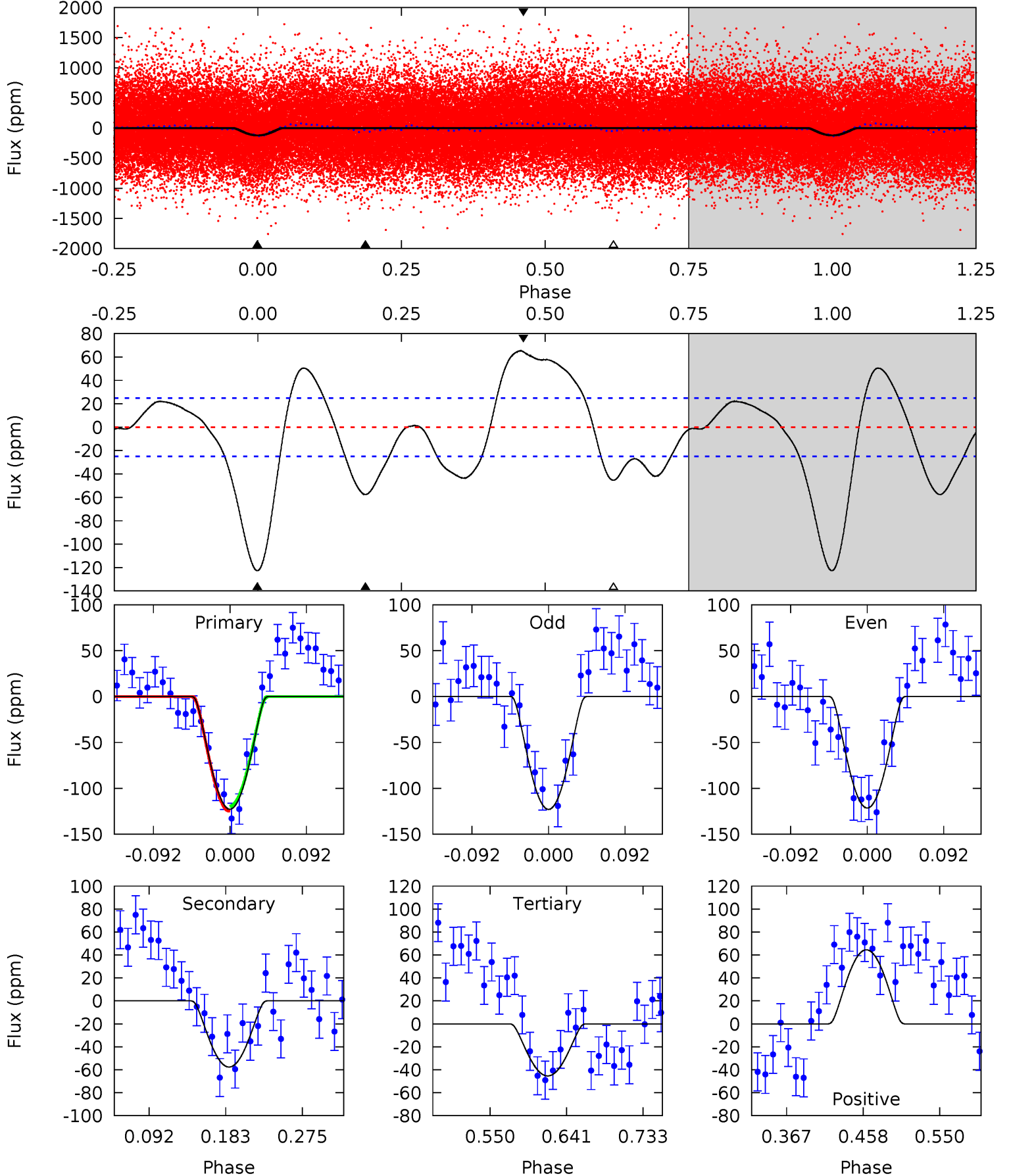




# DV Model-Shift Uniqueness Test

005481285-01, P = 3.172183 Days, E = 128.678299 Days

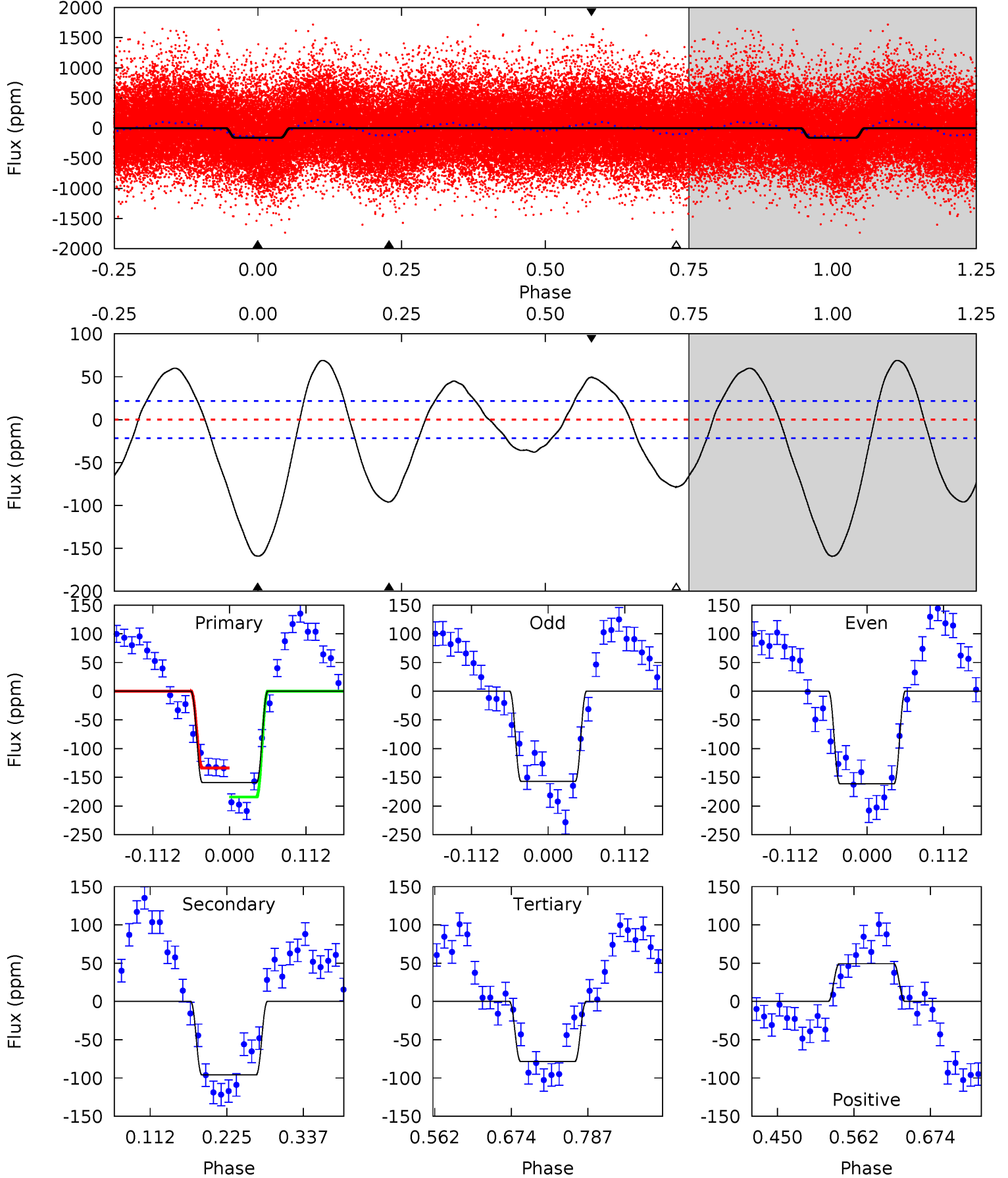
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.6	10.6	8.36	11.9	4.58	1.69	6.38	14.2	10.7	2.26	-1.26	0.14	0.94	0.35	0.49



# Alt Model-Shift Uniqueness Test

005481285-01, P = 3.172225 Days, E = 128.592101 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.4	20.1	16.5	10.4	4.54	1.59	8.66	16.9	23.0	3.67	9.78	0.45	0.99	0.30	0





### Stellar Parameters For KIC 005481285

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6370^{+179}_{-224}$	$4.410^{+0.067}_{-0.202}$	$-0.100^{+0.250}_{-0.300}$	$1.106^{+0.370}_{-0.123}$	$1.148^{+0.172}_{-0.157}$	$1.194^{+0.355}_{-0.649}$
	+3%/-4%	+2%/-5%	+250%/-300%	+33%/-11%	+15%/-14%	+30%/-54%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 005481285-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-58 \pm 5$	$5.34^{+5.91}_{-3.62}$	$1996^{+144}_{-106}$	$3194^{+1643}_{-814}$	$2.169^{+18.243}_{-1.684}$
Alt.	$-96 \pm 5$	$5.13^{+5.46}_{-3.51}$	$2000^{+129}_{-112}$	$3524^{+2025}_{-823}$	$3.937^{+34.760}_{-3.064}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming A=0.3)

$A_{obs}$  = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

## DV Centroid Data

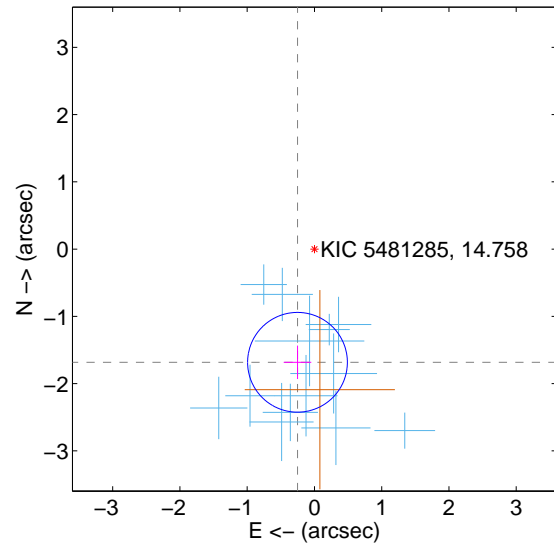
Supplemental centroid analysis for 005481285-01. Kepler magnitude: 14.76. Transit SNR 12.33

There are 13 quarters with good PRF difference image offsets

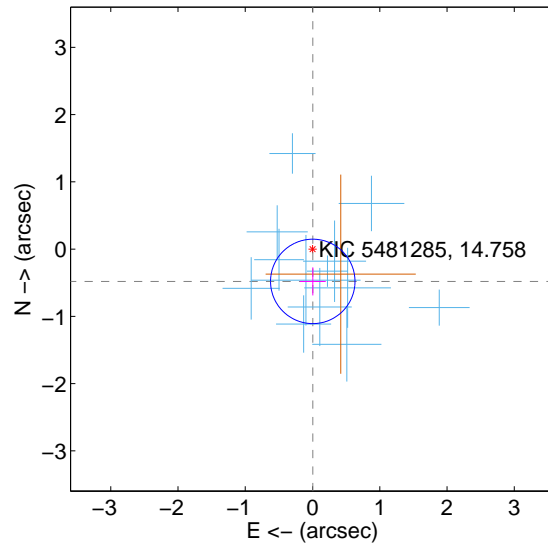
The direct PRF centroid is offset from the target star catalog position by about 1.75 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>1.702 \pm 0.247</math></b>	<b>6.88</b>	$0.252 \pm 0.205$	$-1.683 \pm 0.248$
PRF-fit source offset from KIC position	$0.480 \pm 0.209$	2.30	$-0.004 \pm 0.193$	$-0.480 \pm 0.209$
photometric centroid source offset	$1.34 \pm 0.55$	2.43	$1.03 \pm 0.54$	$-0.86 \pm 0.57$

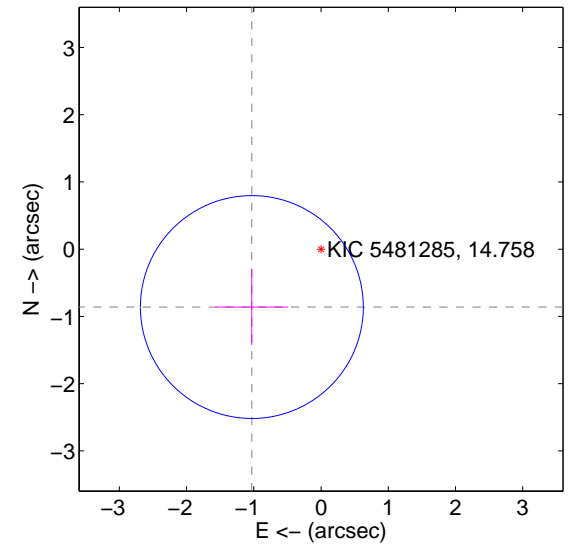
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

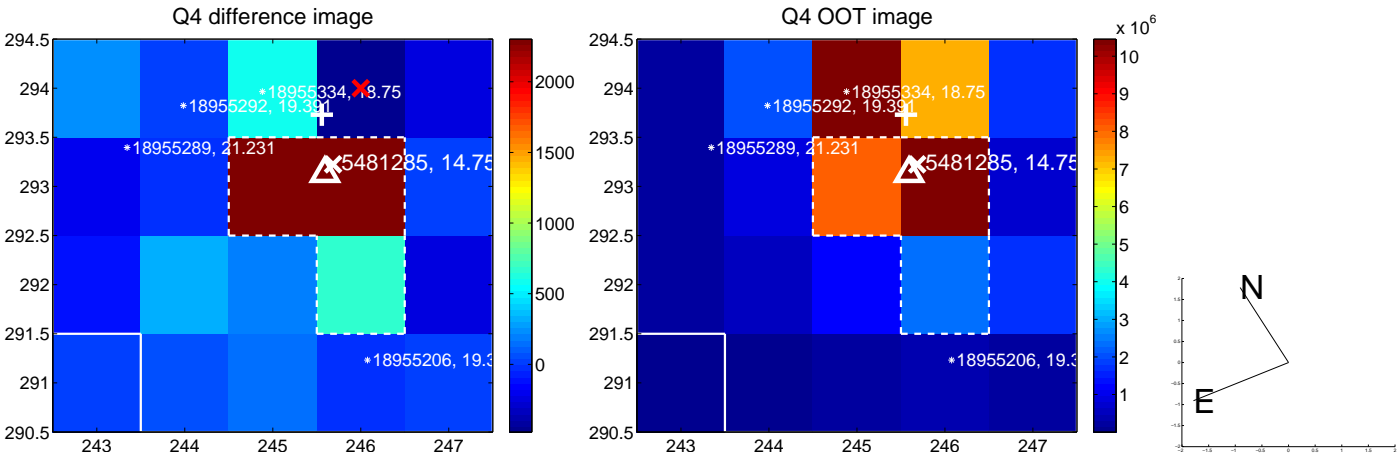
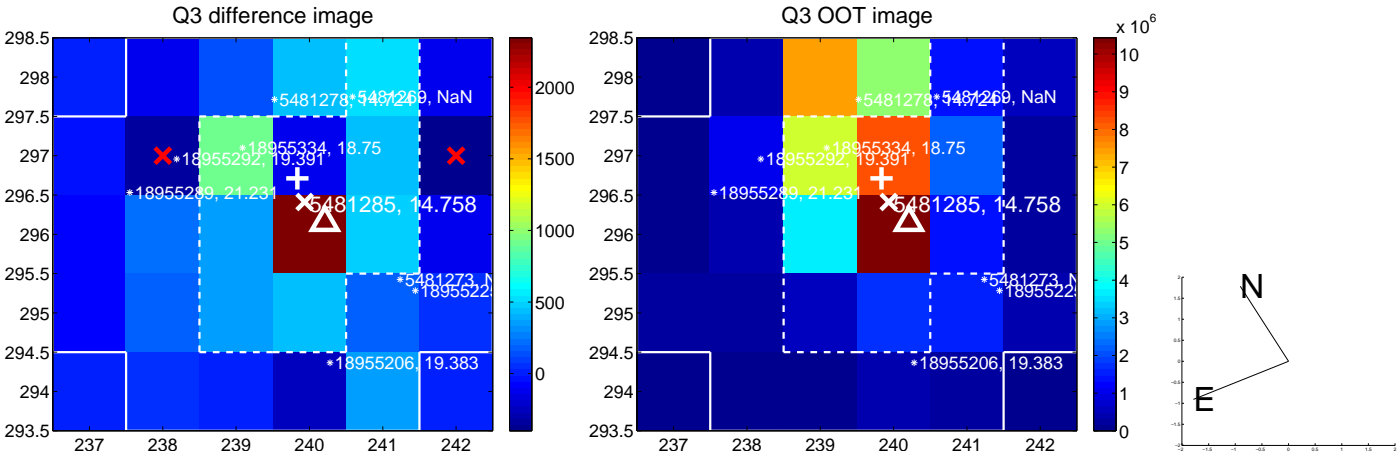
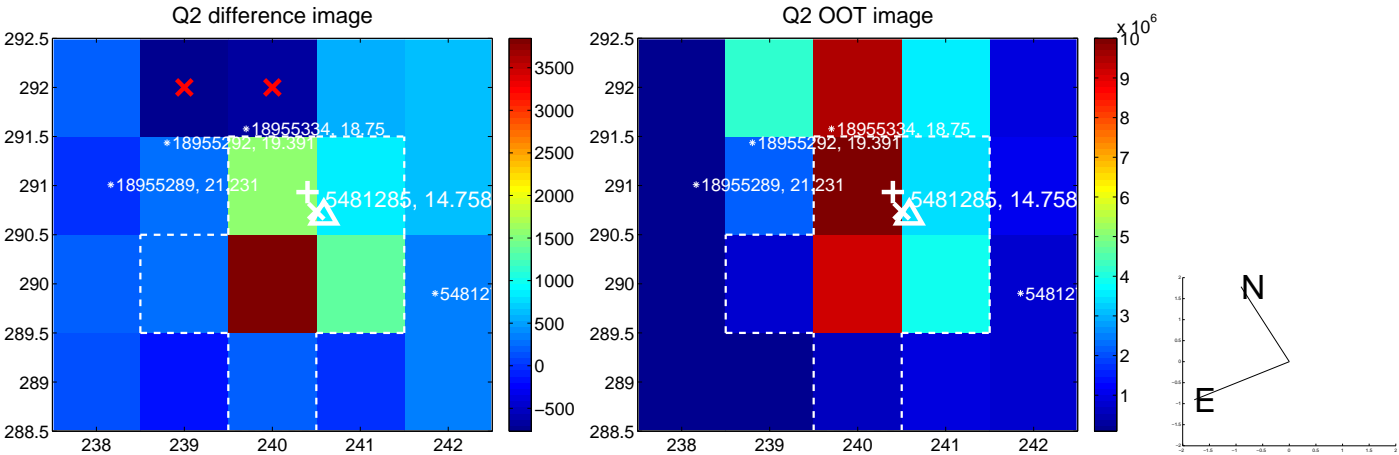
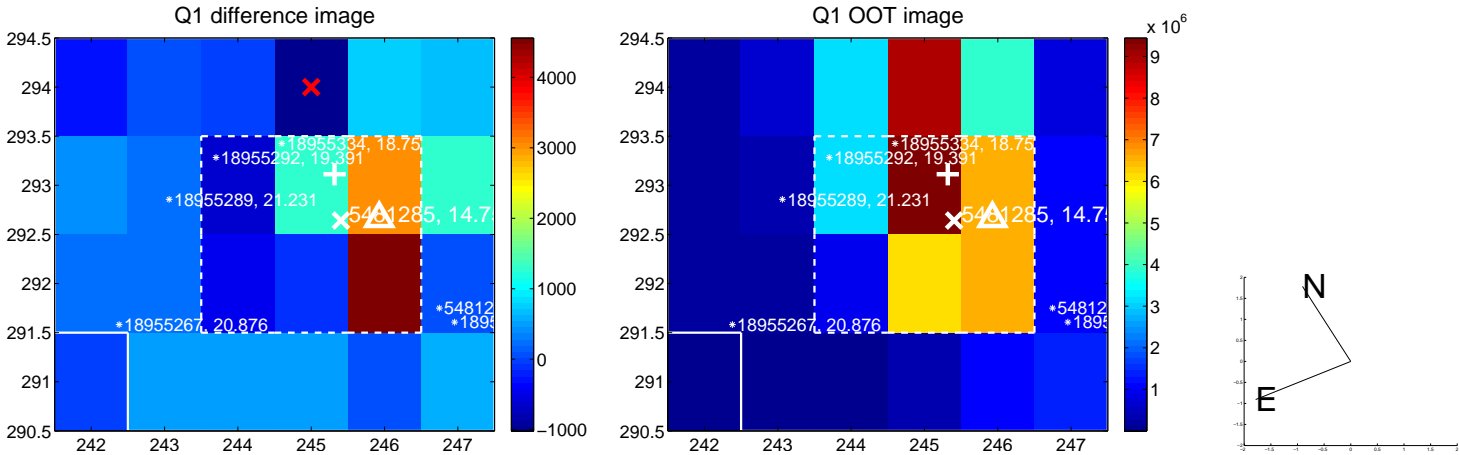


offset from photometric centroids

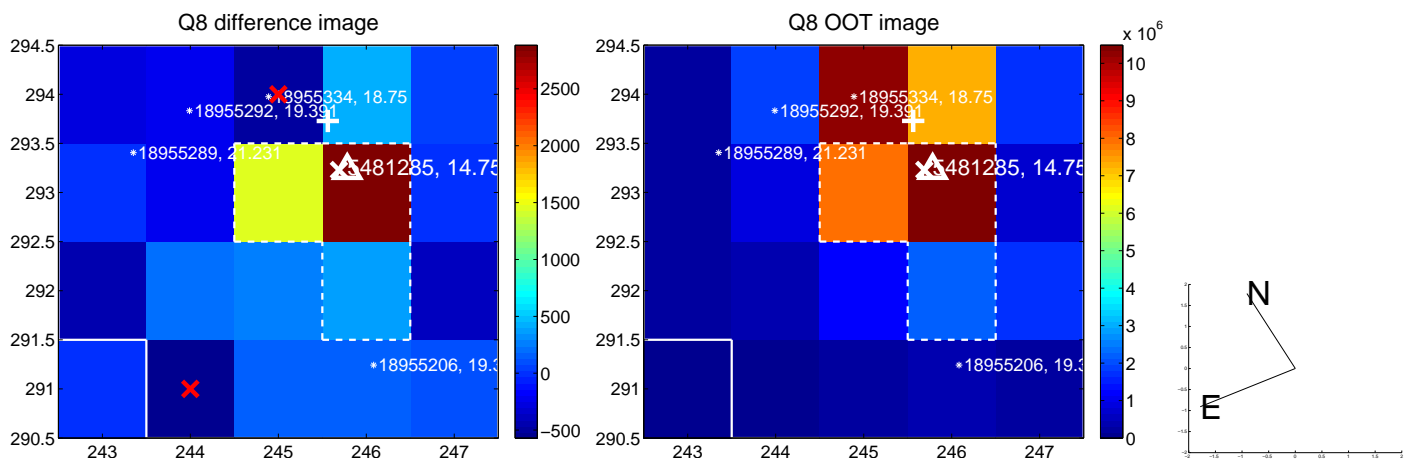
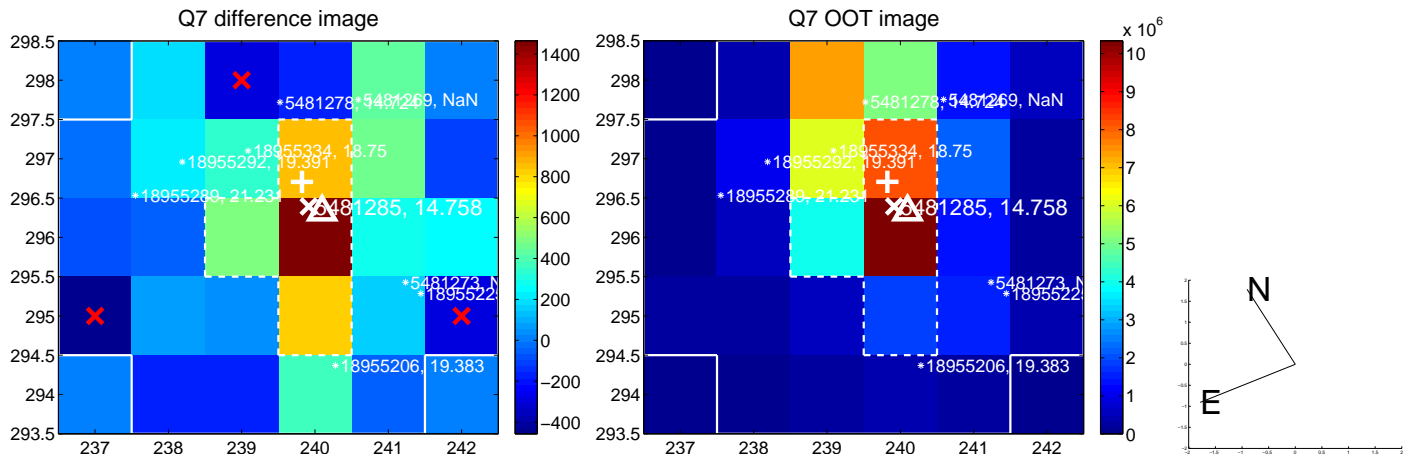
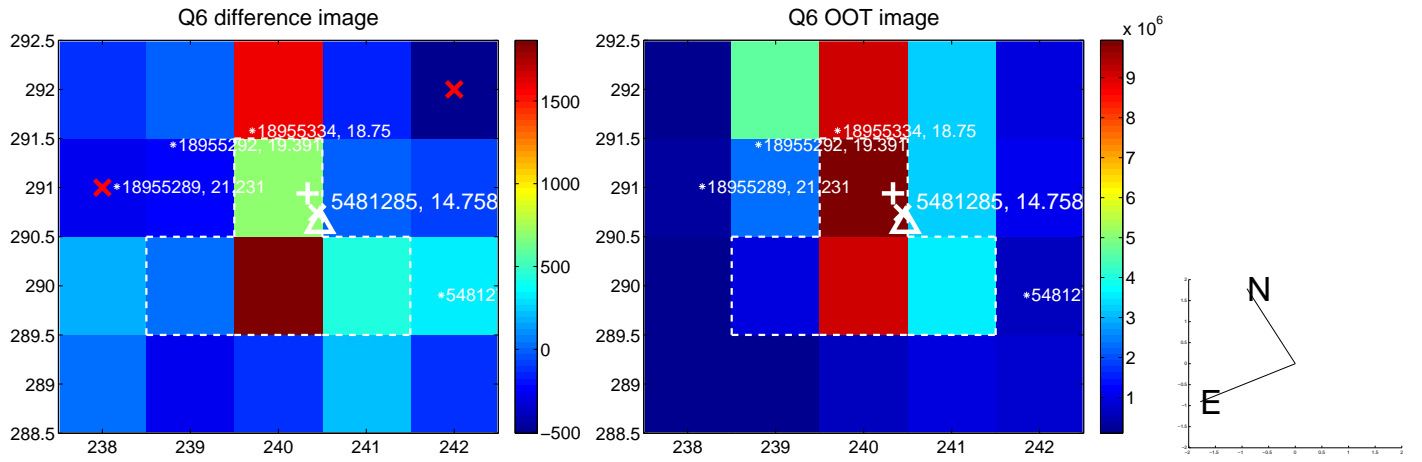
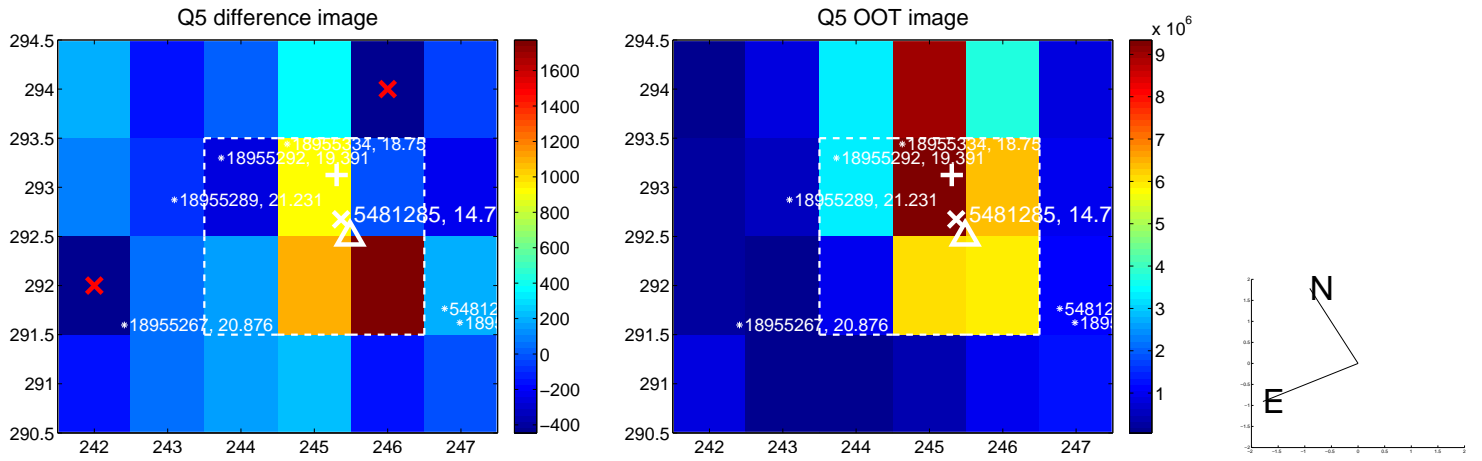


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



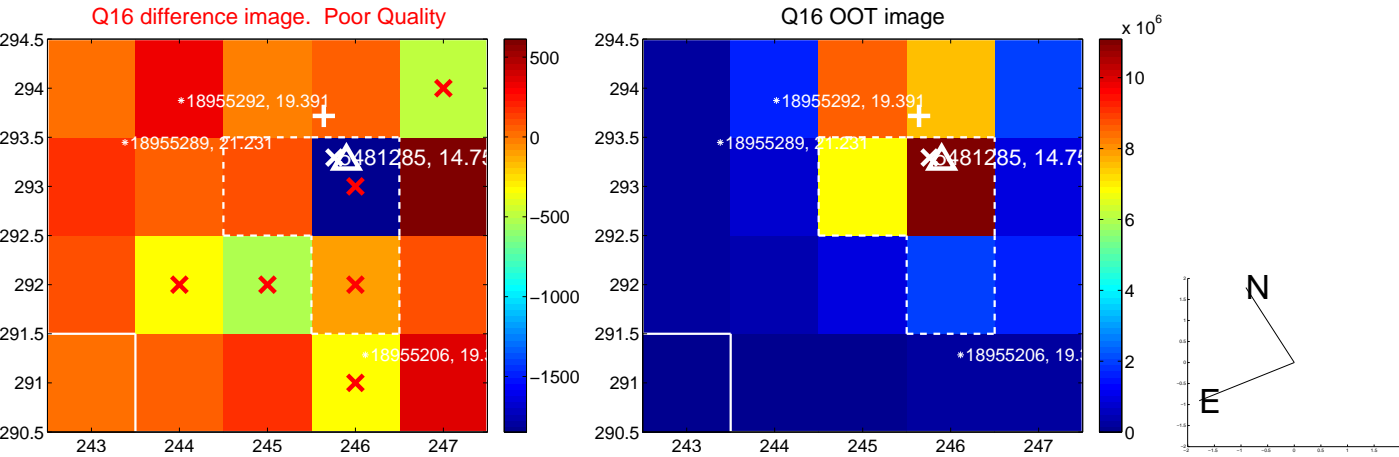
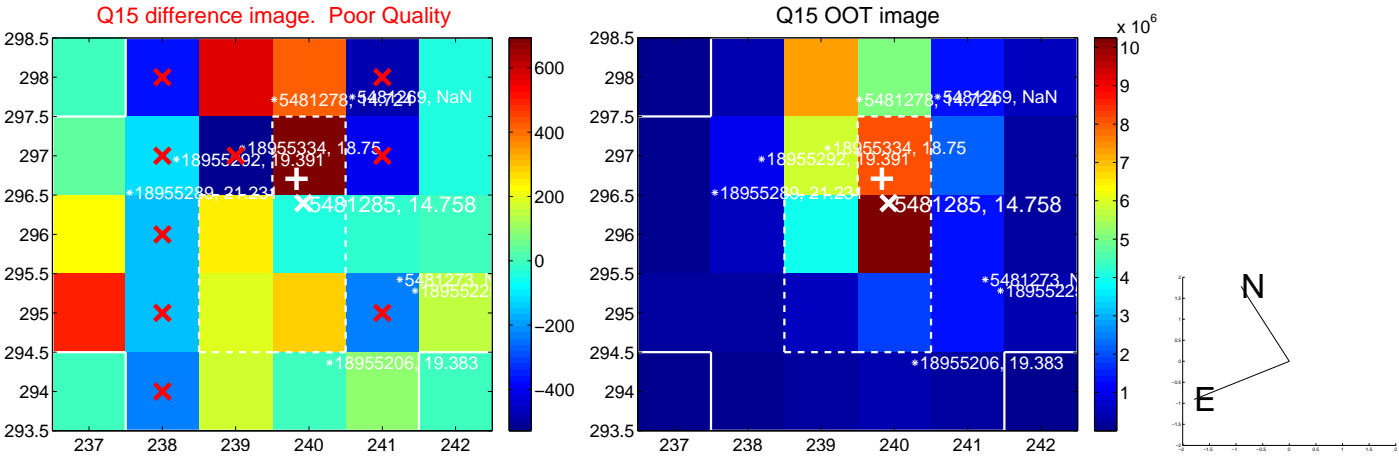
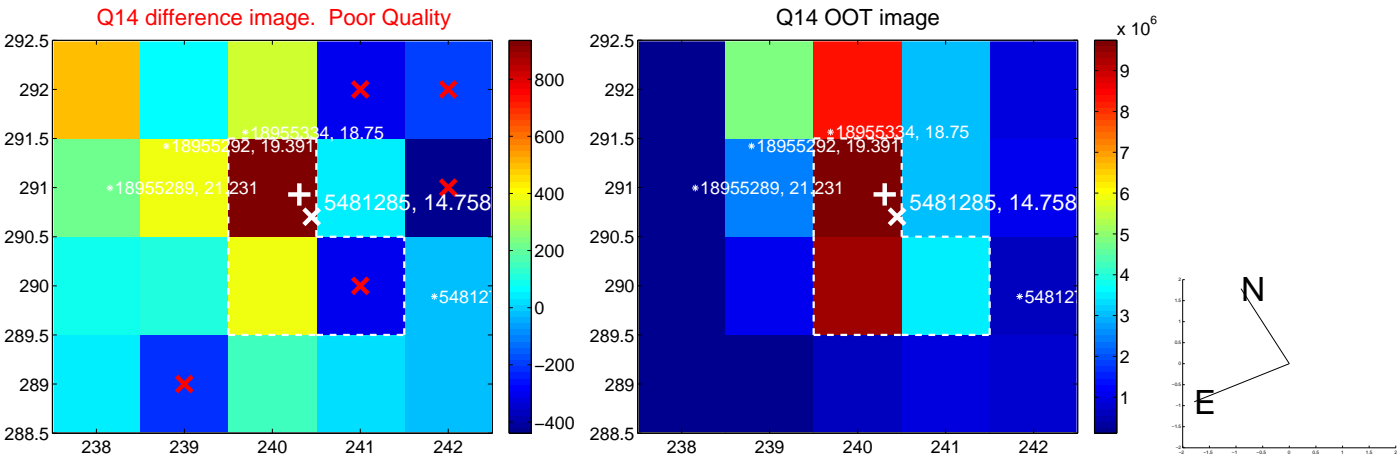
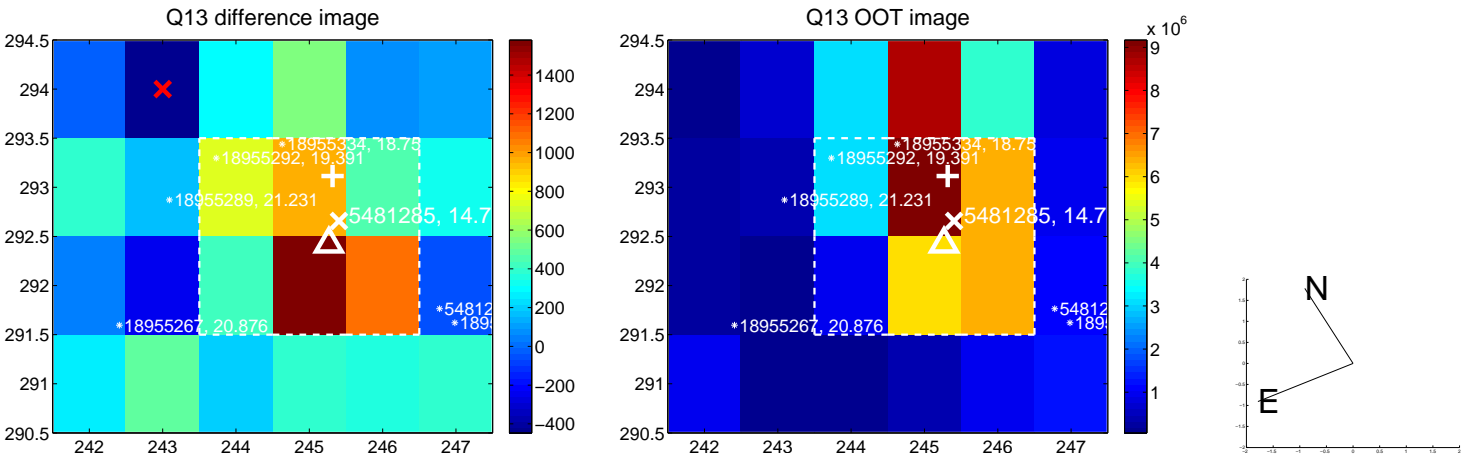
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



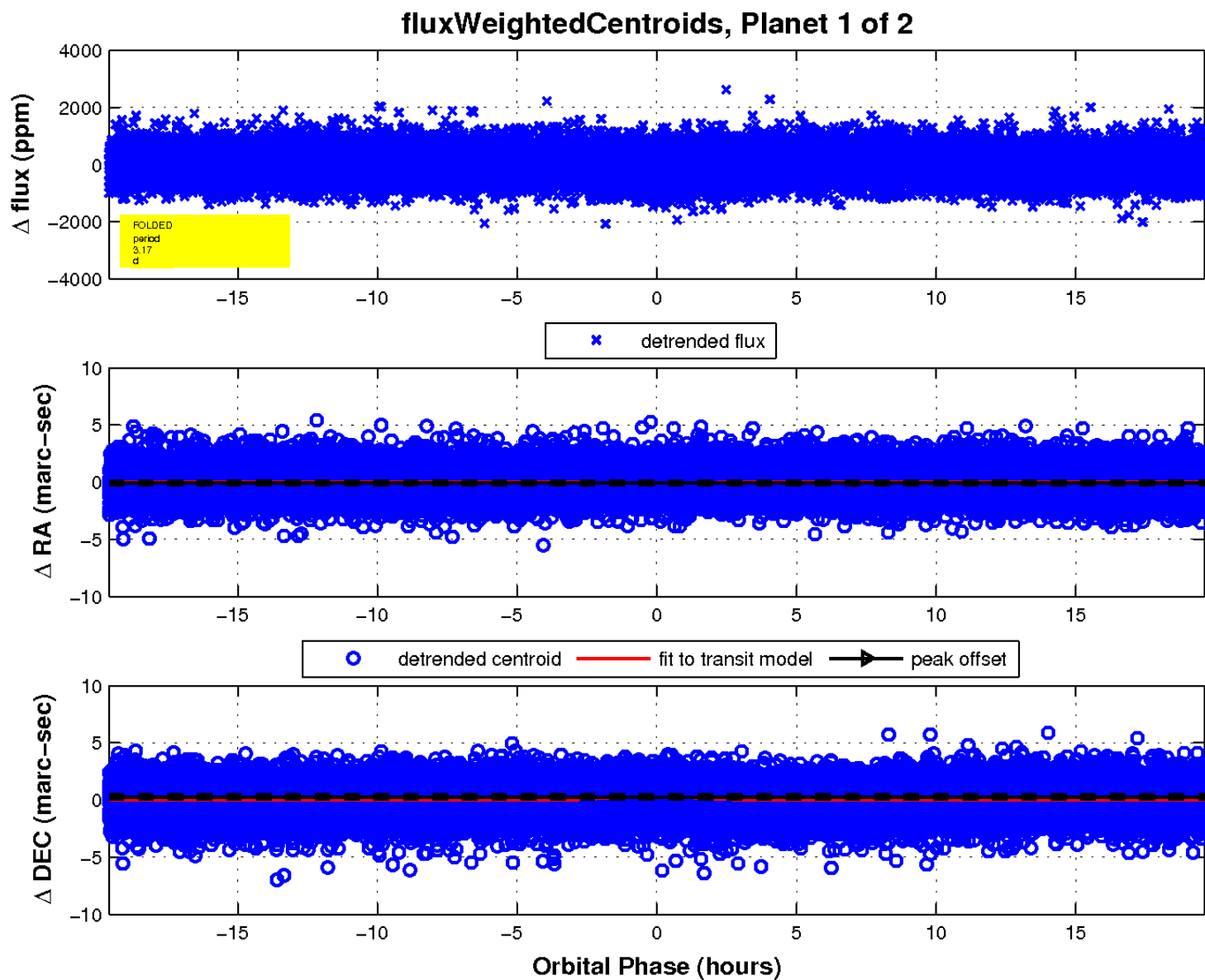
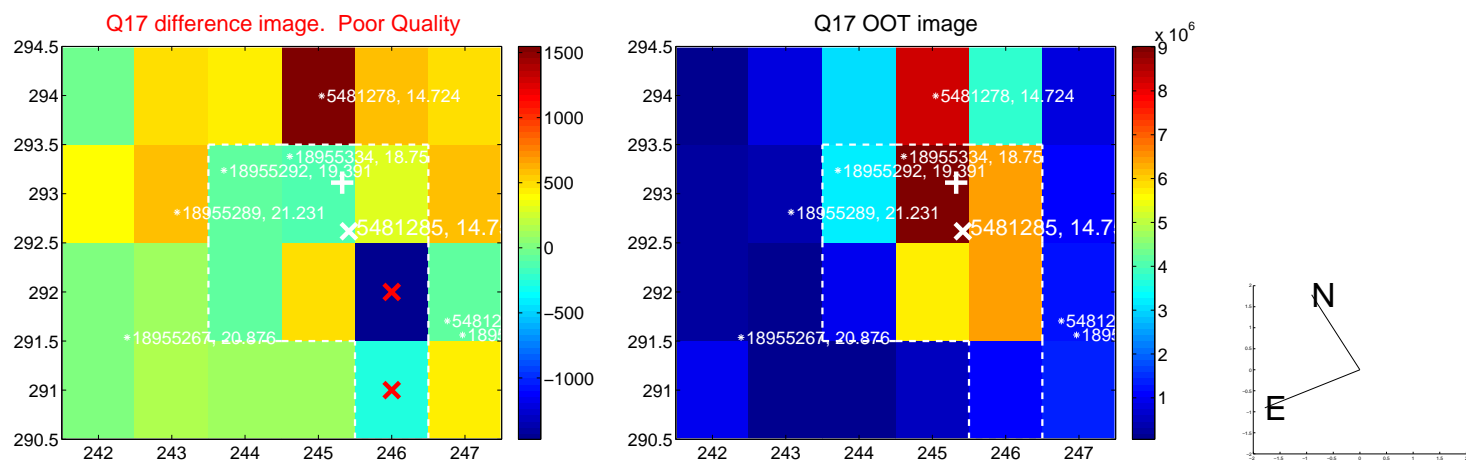




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

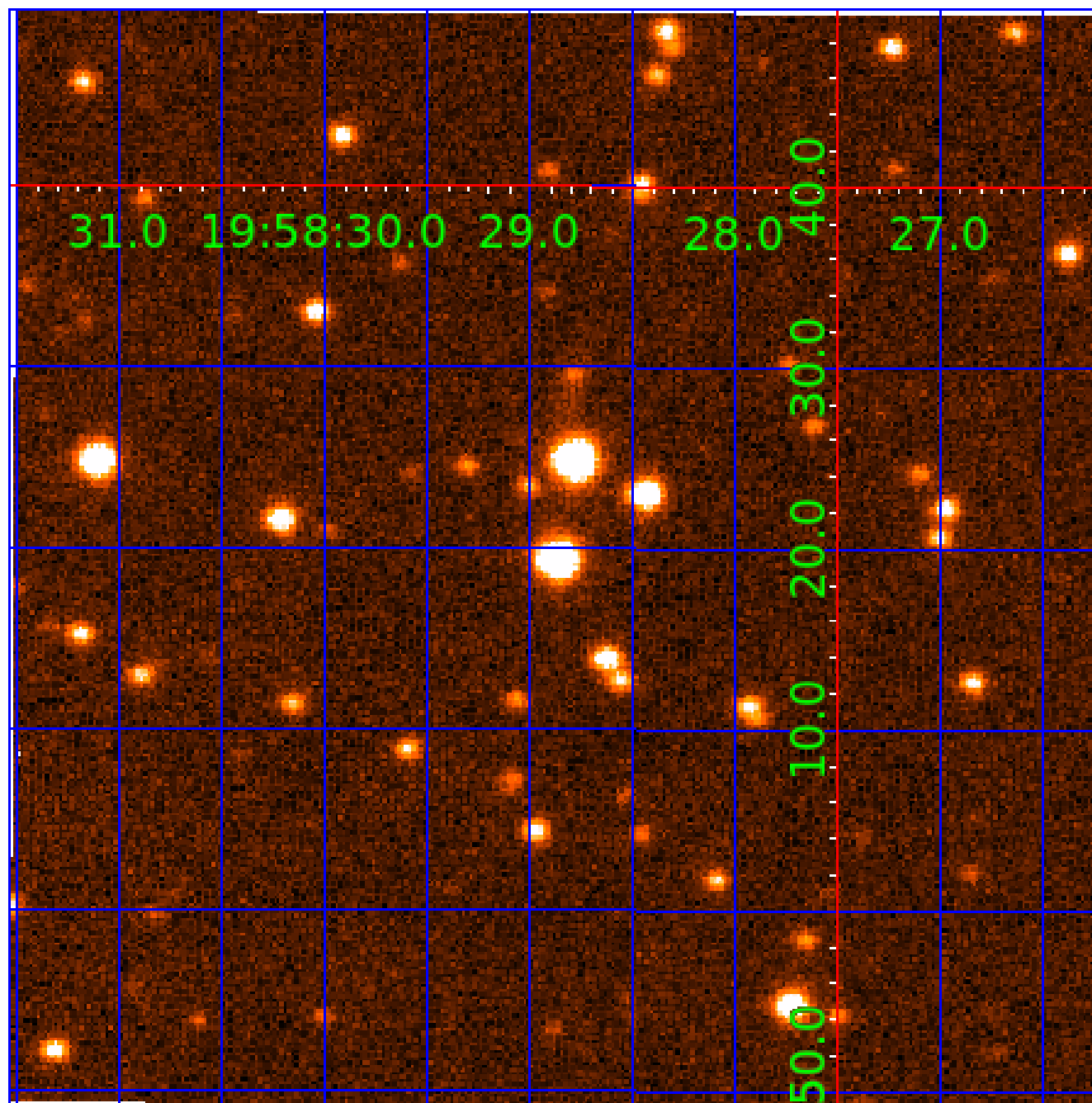


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005481285

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005481285-01	OBS	No	3.172183	131.850482	130.3	6.535	11.2	12.3	1.11	6370	2.54	922.17
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## Robovetter Results

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005481285-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
005481285-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

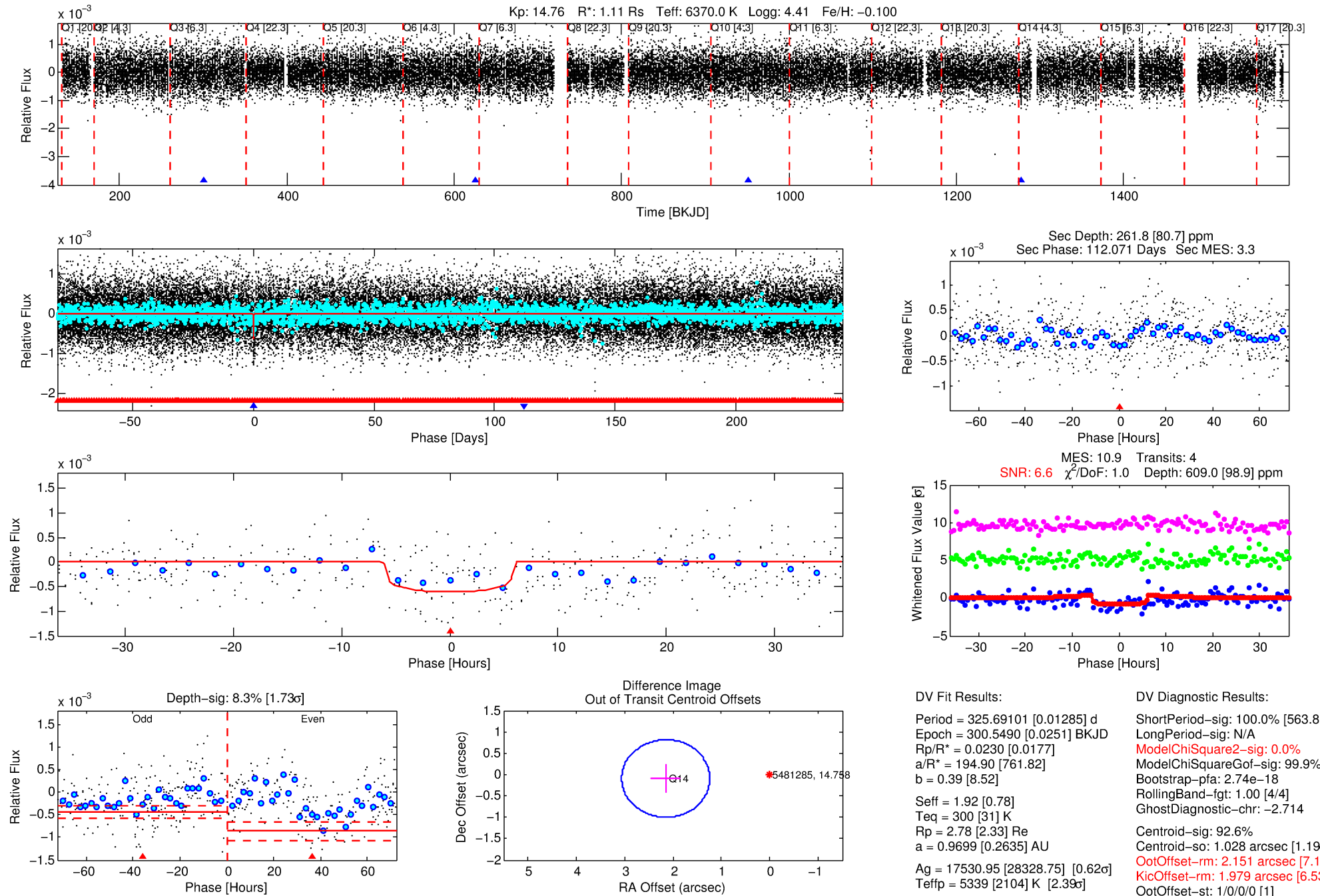
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005481285-02

No Significant Match Found

# DV One-Page Summary

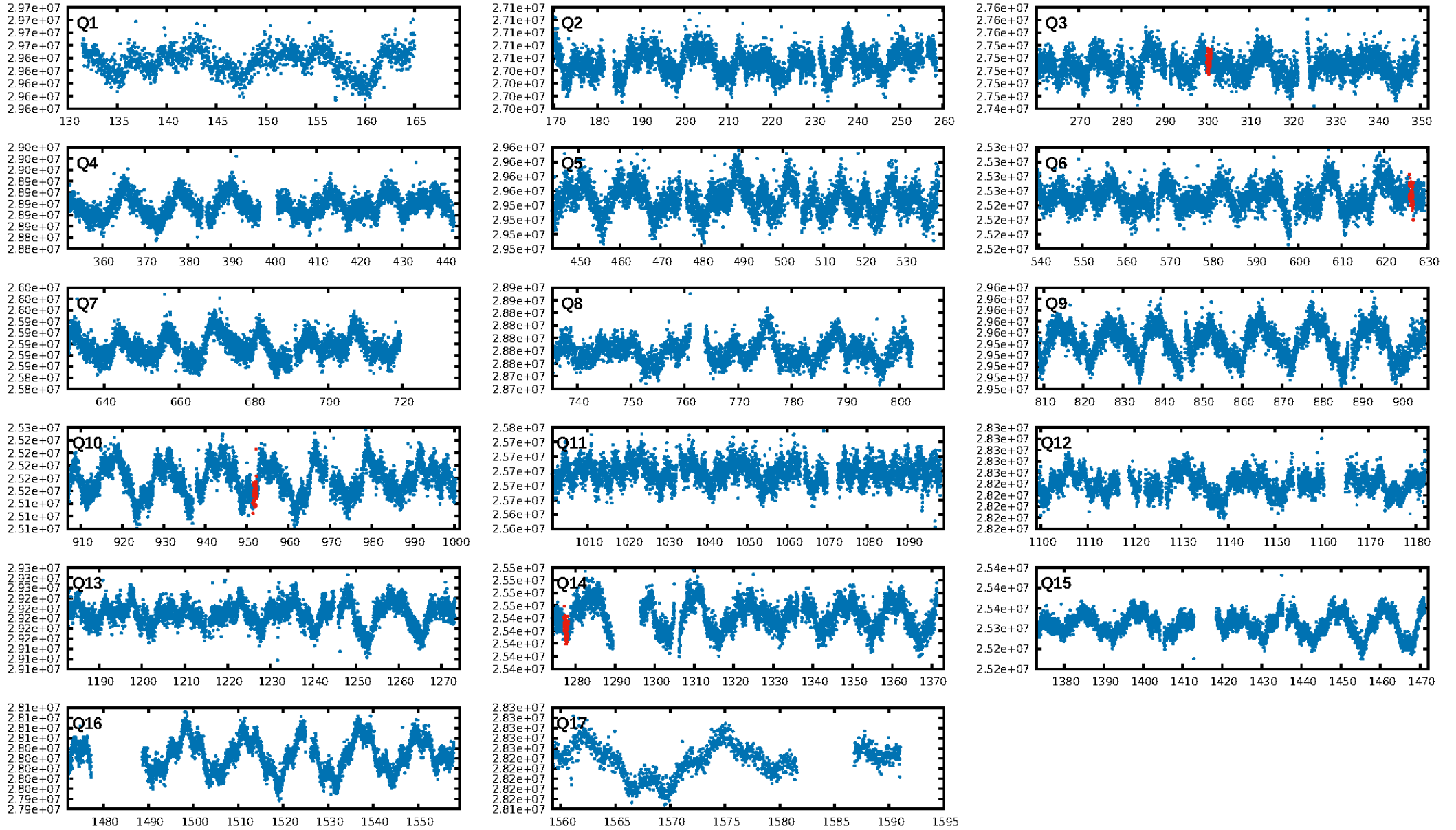
KIC: 5481285 Candidate: 2 of 2 Period: 325.691 d



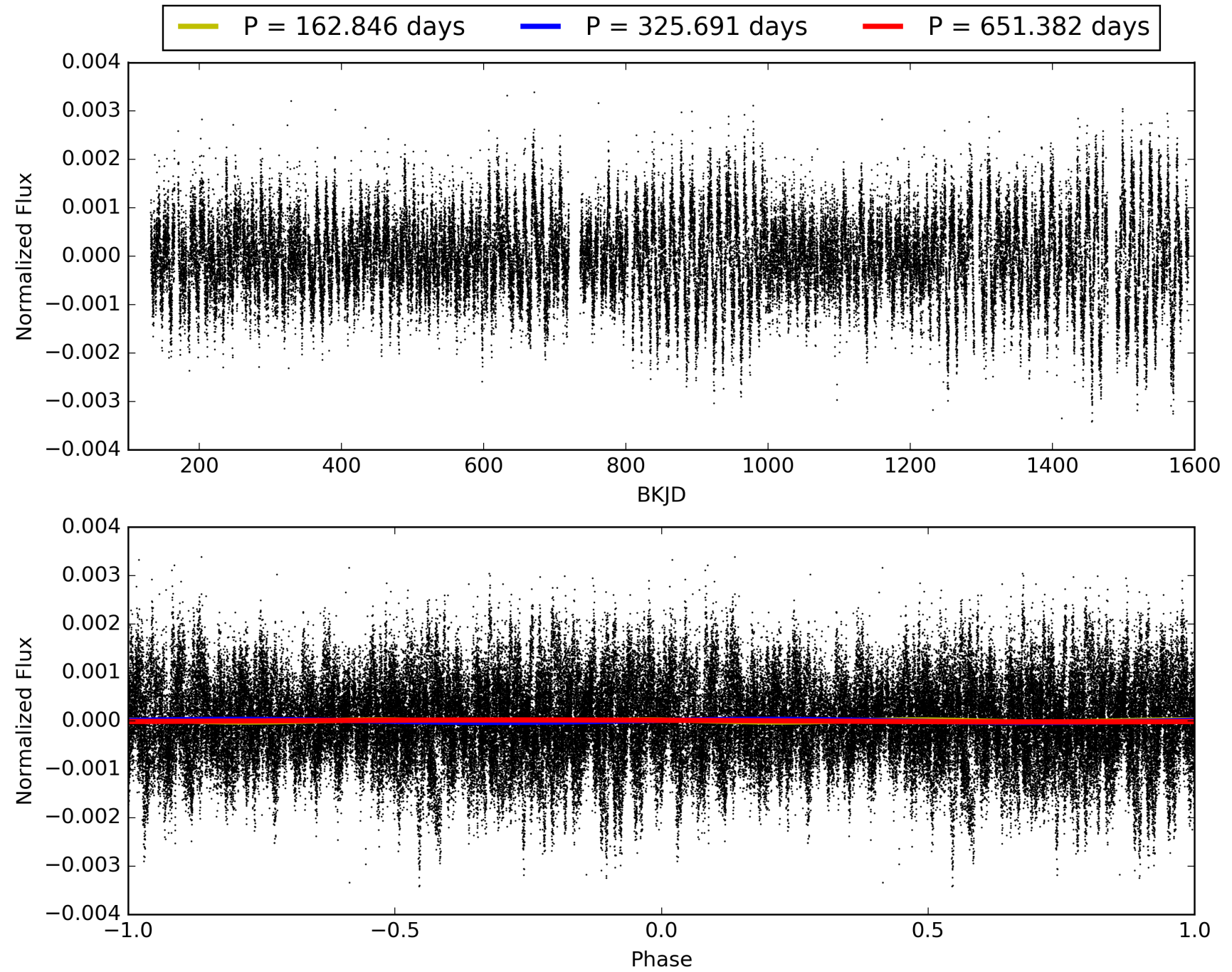
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:03:03 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005481285-02, PDC Light Curves



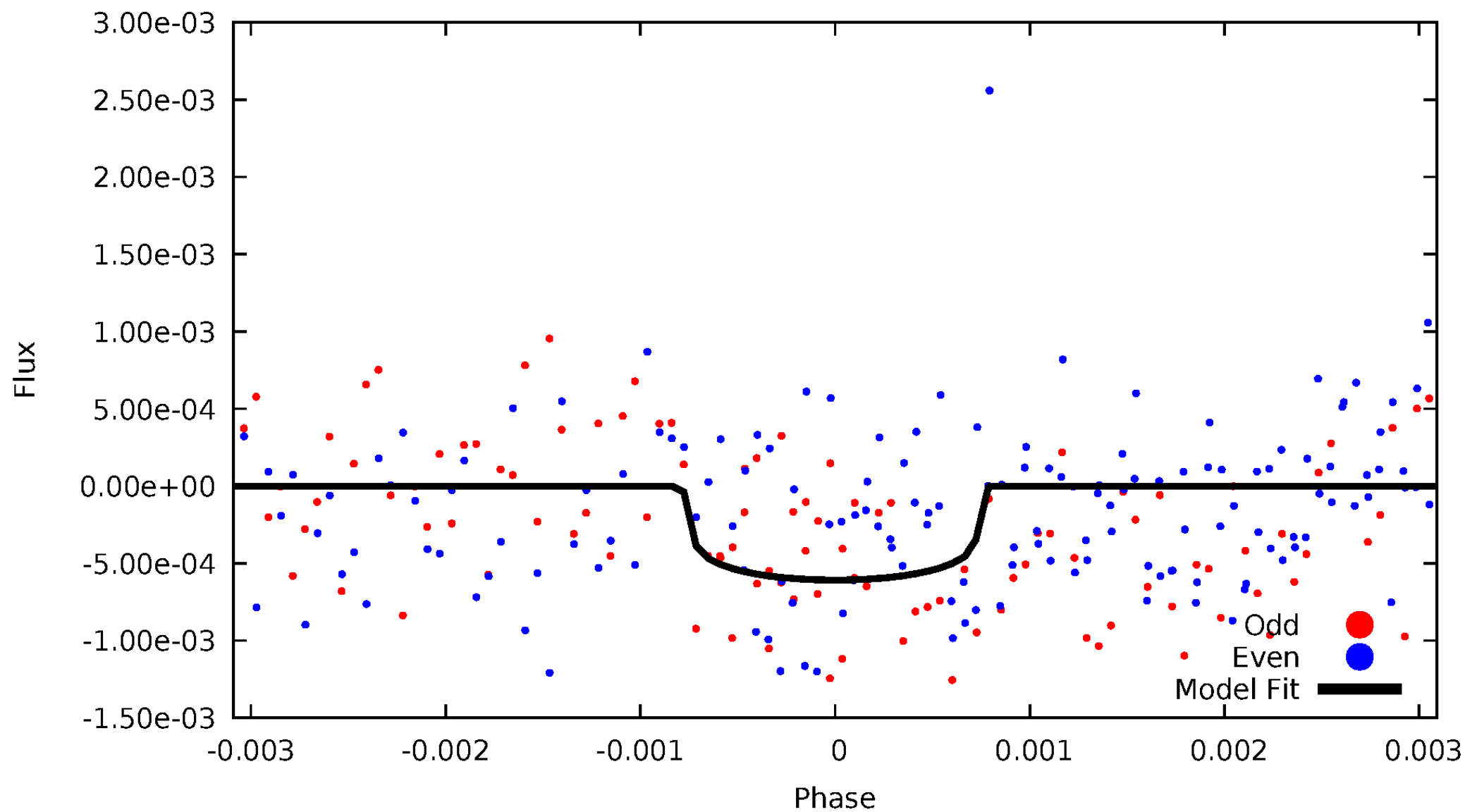
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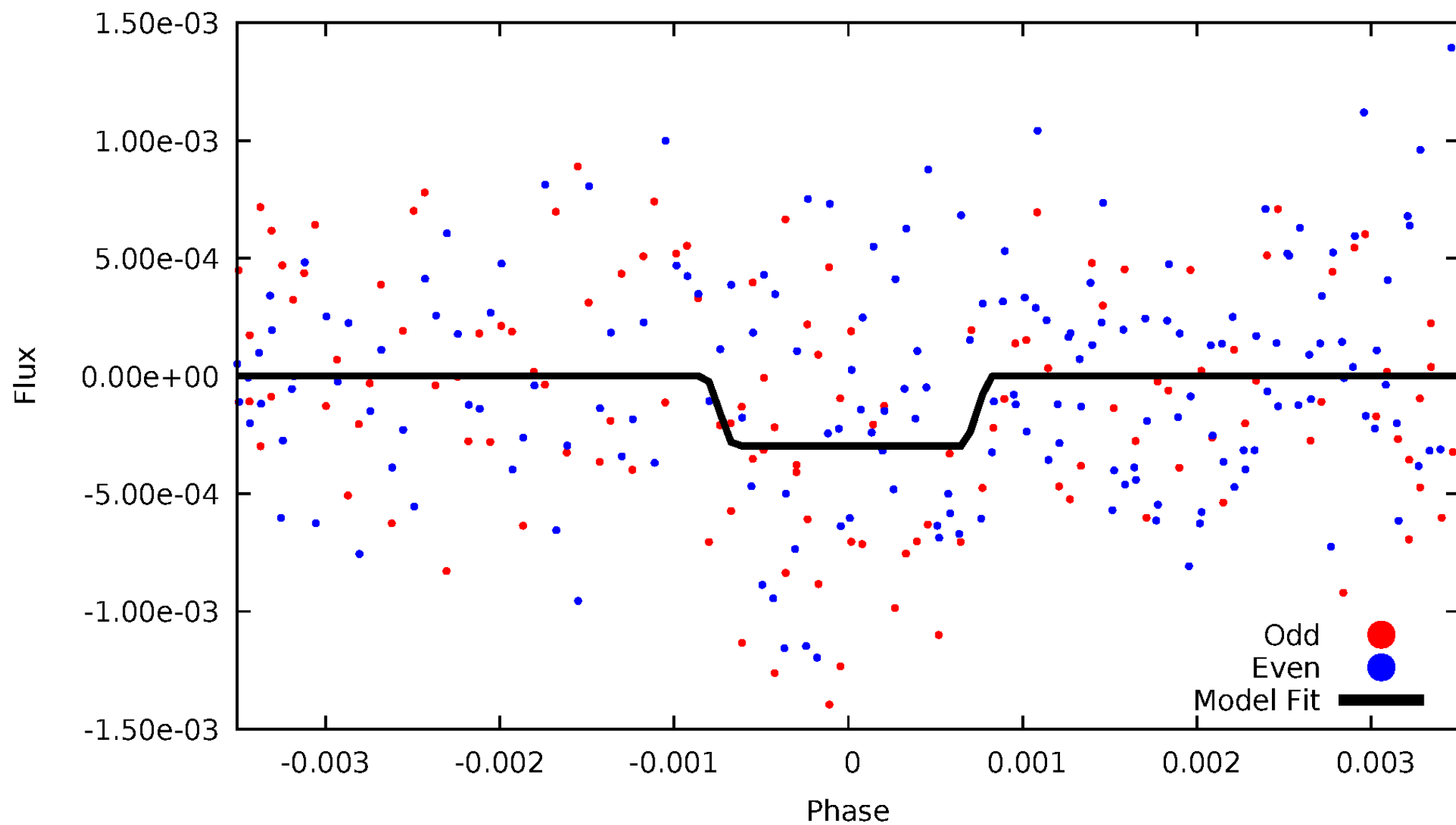
# DV Odd/Even

TCE 005481285-02



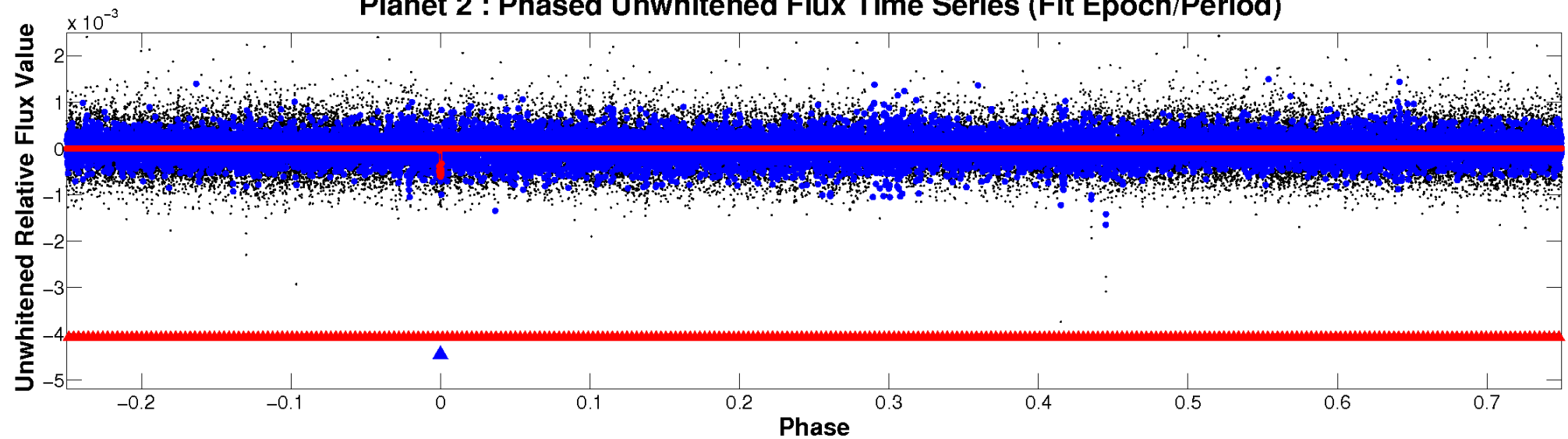
# ALT Odd/Even

TCE 005481285-02

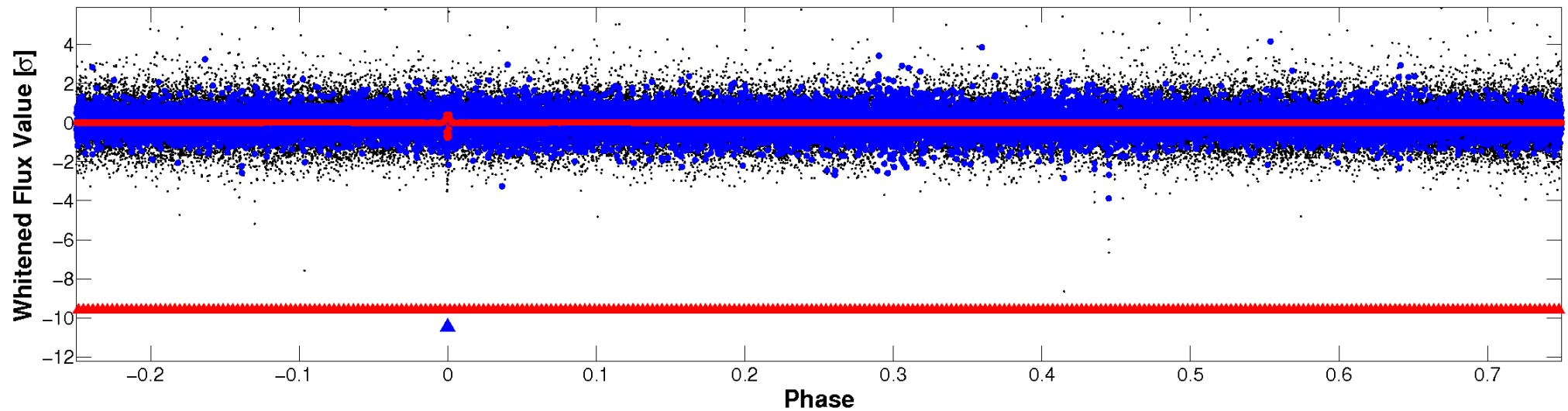


# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

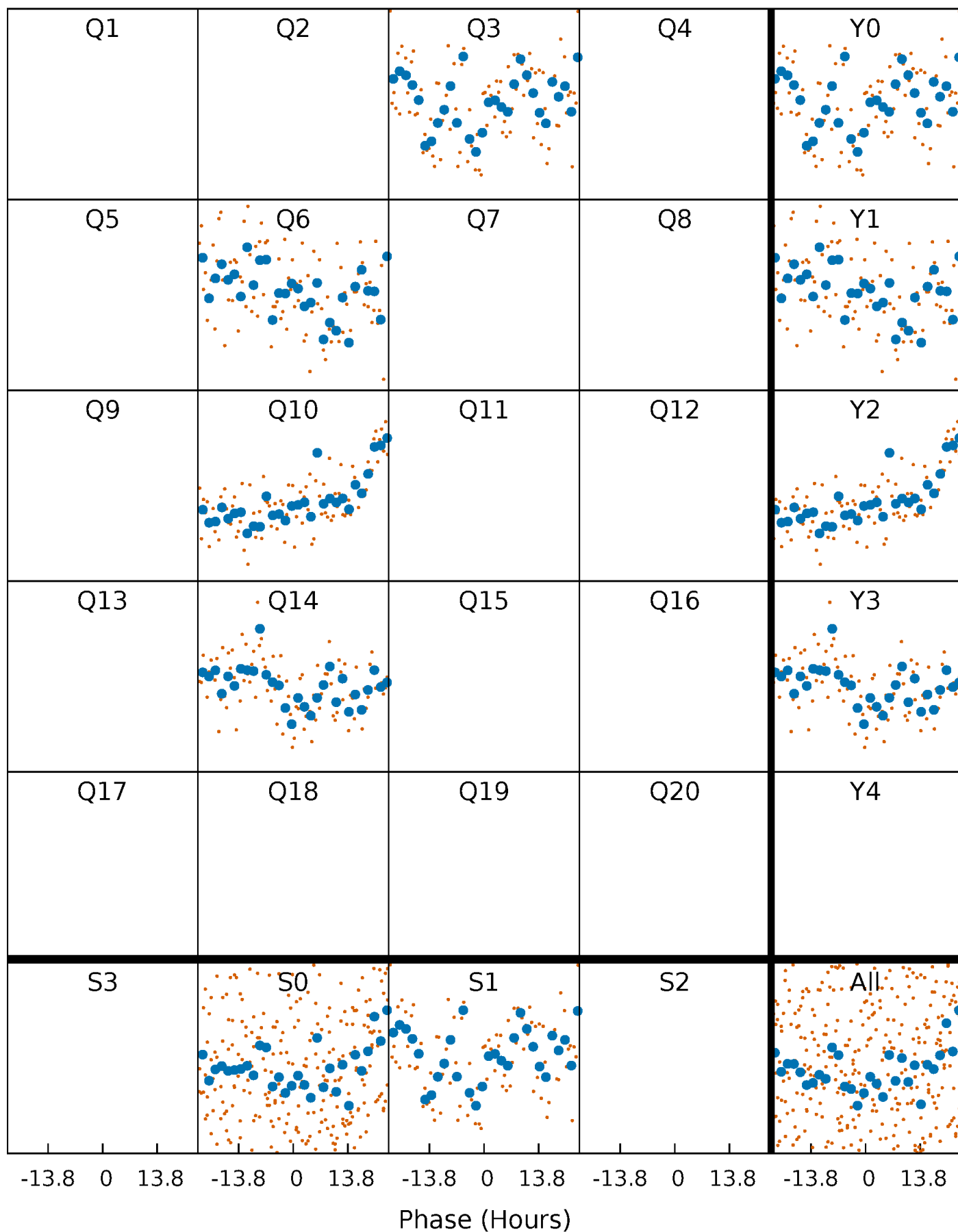


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



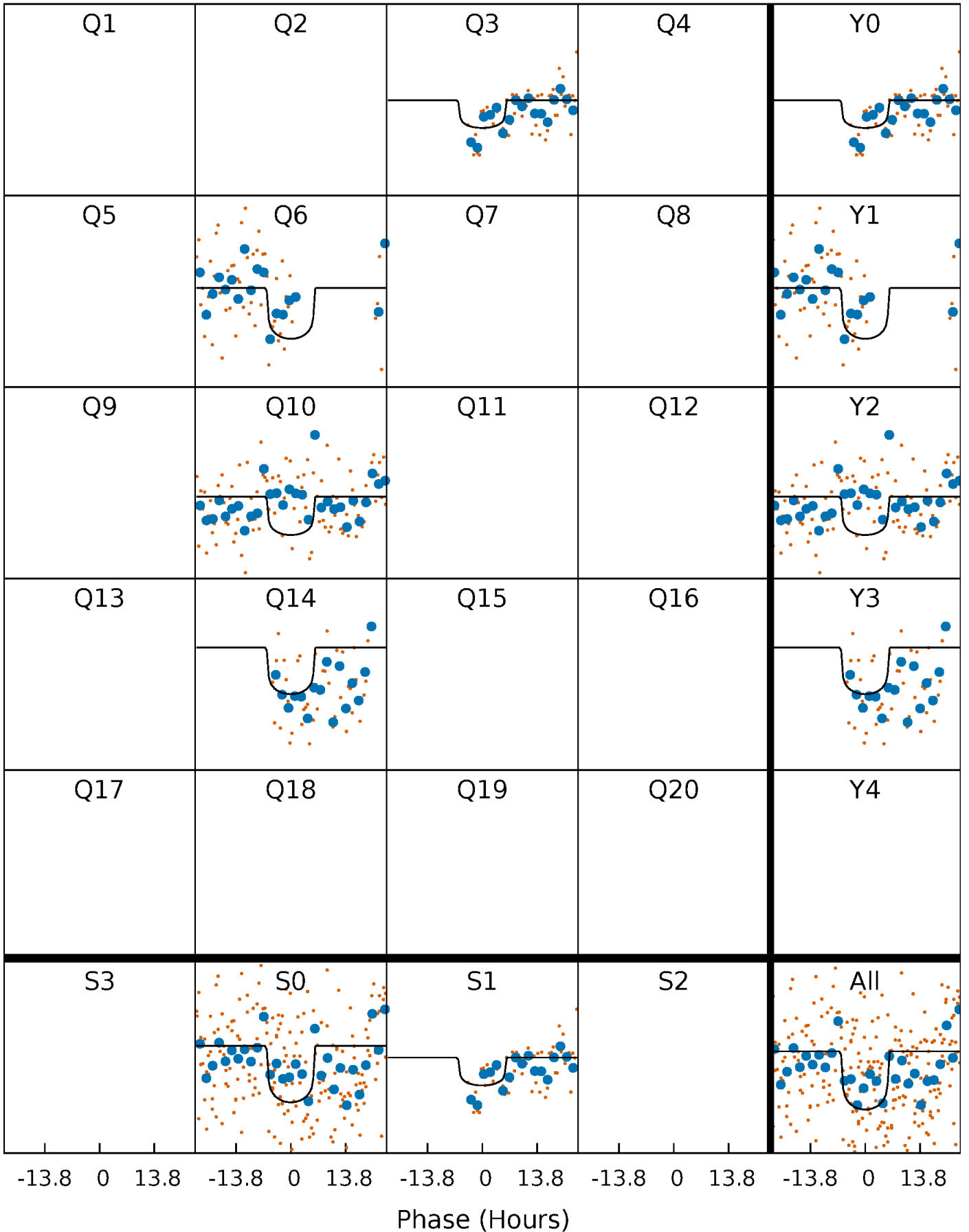
# PDC Quarter-Phased Transit Curves

TCE 005481285-02     $P=325.691006$  Days     $T_0=300.549040$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 005481285-02     $P=325.691006$  Days     $T_0=300.549040$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005481285-02 P=325.690513 Days  $T_0=300.577369$  (BKJD)

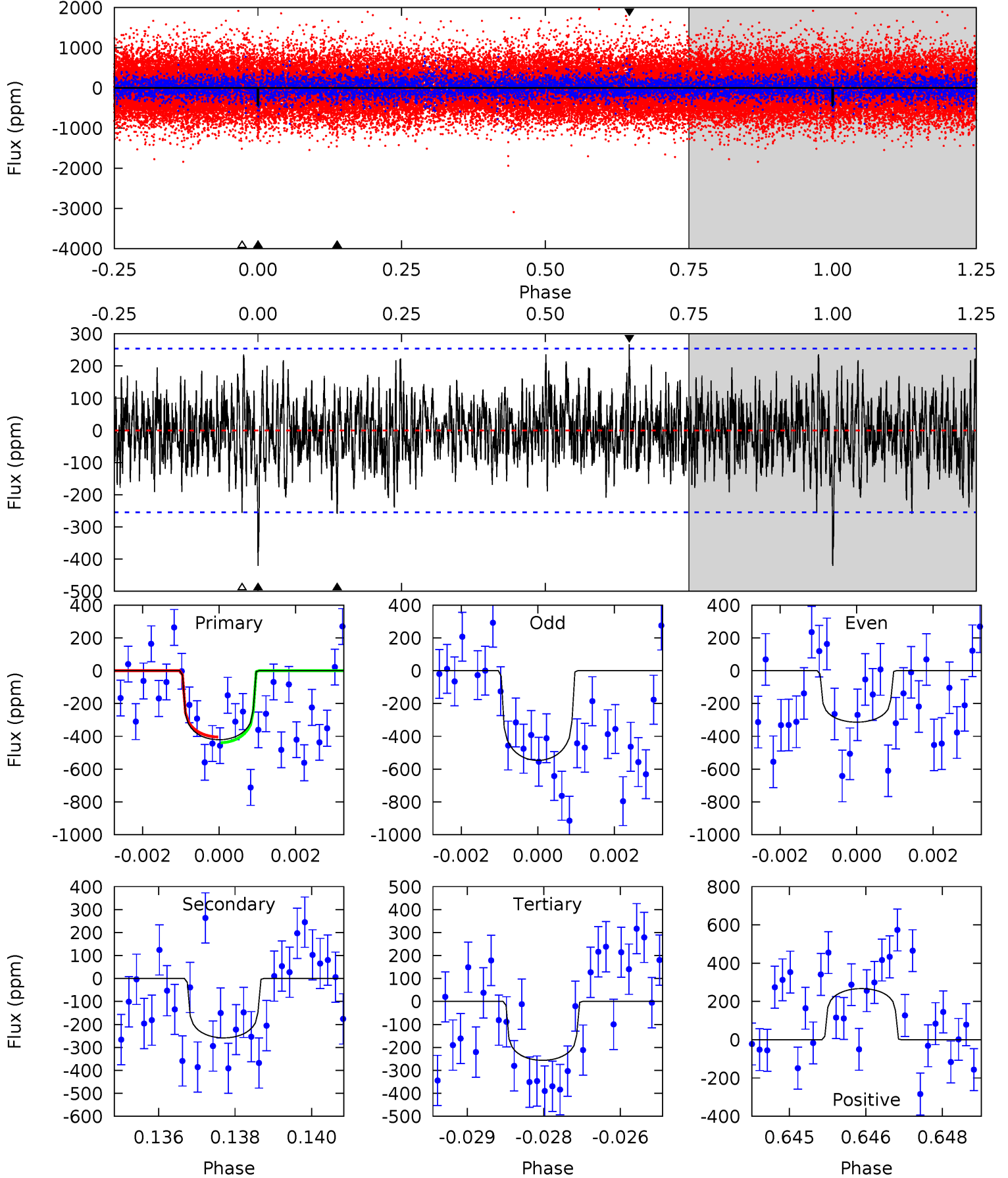




# DV Model-Shift Uniqueness Test

005481285-02, P = 325.691006 Days, E = 300.549040 Days

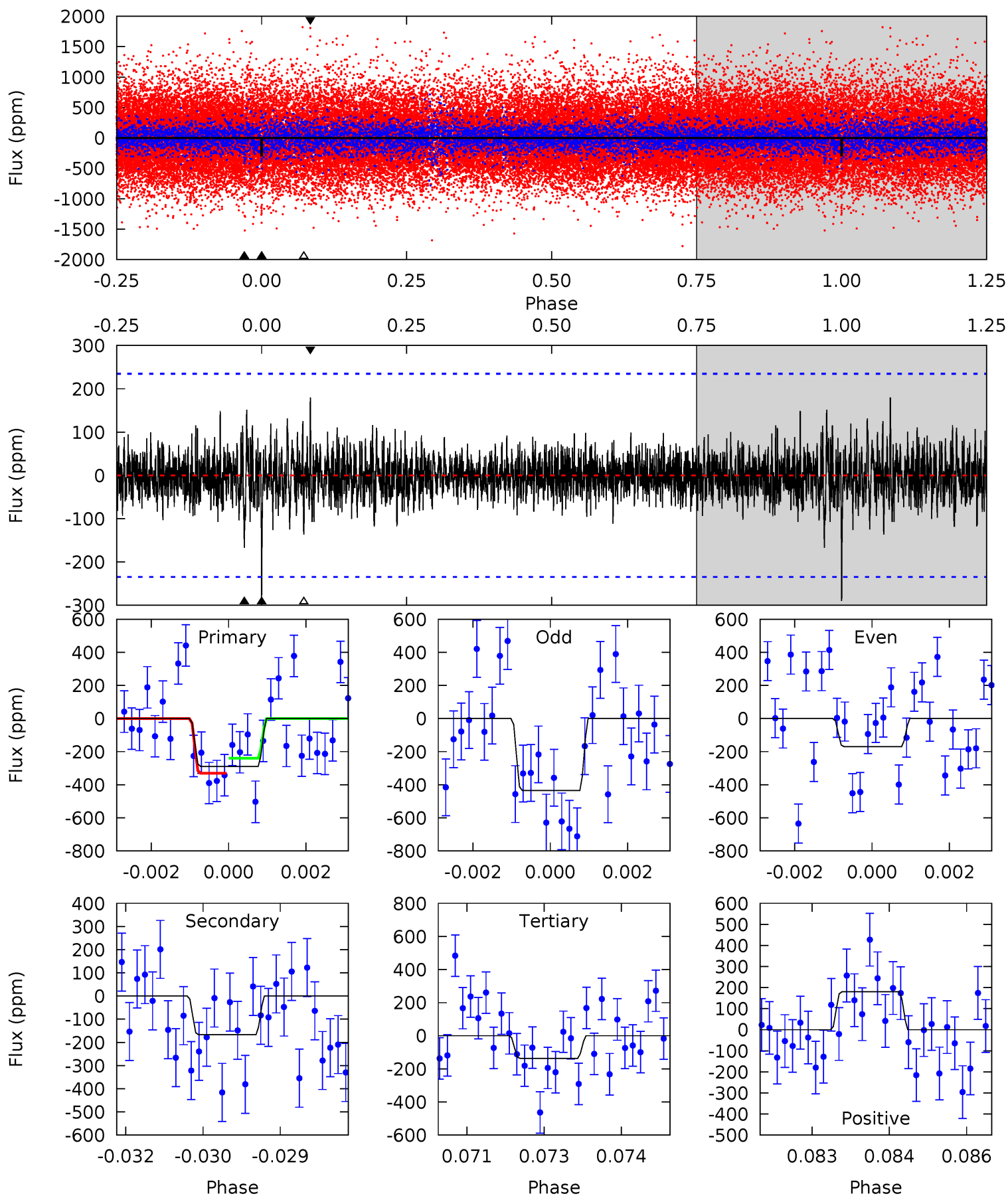
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.88	5.45	5.40	5.63	5.36	3.15	1.60	3.47	3.25	0.05	-0.18	2.45	0.88	0.39	0.37



# Alt Model-Shift Uniqueness Test

005481285-02, P = 325.690513 Days, E = 300.577369 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.60	3.81	3.12	4.10	5.36	3.14	0.86	3.48	2.50	0.69	-0.29	3.01	1.03	0.38	1.04



### Stellar Parameters For KIC 005481285

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6370^{+179}_{-224}$	$4.410^{+0.067}_{-0.202}$	$-0.100^{+0.250}_{-0.300}$	$1.106^{+0.370}_{-0.123}$	$1.148^{+0.172}_{-0.157}$	$1.194^{+0.355}_{-0.649}$
	+3%/-4%	+2%/-5%	+250%/-300%	+33%/-11%	+15%/-14%	+30%/-54%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 005481285-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-259 \pm 47$	$3.18^{+2.09}_{-2.00}$	$428^{+32}_{-22}$	$5187^{+3501}_{-984}$	$12989^{+78284}_{-8294}$
Alt.	$-167 \pm 44$	$2.62^{+1.98}_{-1.77}$	$423^{+29}_{-21}$	$5069^{+4053}_{-1066}$	$12593^{+99183}_{-8834}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

## DV Centroid Data

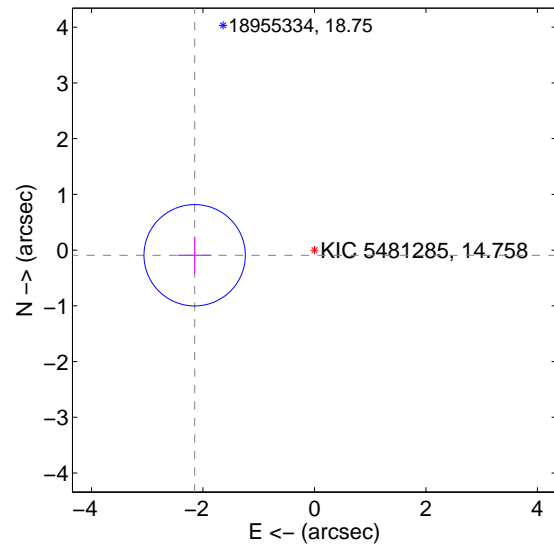
Supplemental centroid analysis for 005481285-02. Kepler magnitude: 14.76. Transit SNR 6.57

There are 1 quarters with good PRF difference image offsets

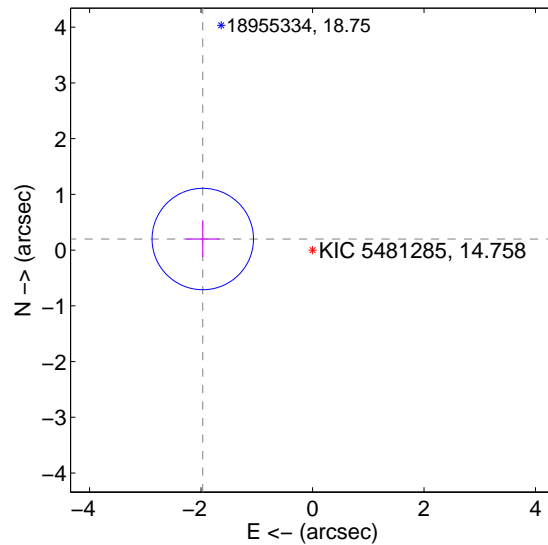
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.151 \pm 0.303$	7.10	$2.149 \pm 0.303$	$-0.092 \pm 0.326$
PRF-fit source offset from KIC position	$1.979 \pm 0.303$	6.53	$1.969 \pm 0.303$	$0.199 \pm 0.326$
photometric centroid source offset	$1.03 \pm 0.86$	1.19	$0.10 \pm 0.72$	$1.02 \pm 0.86$

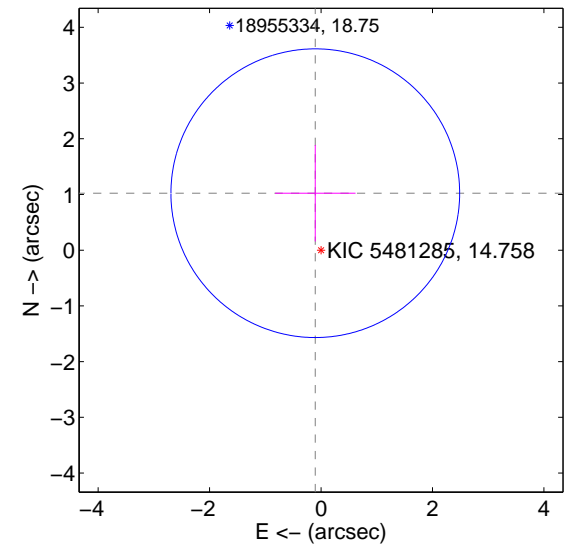
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

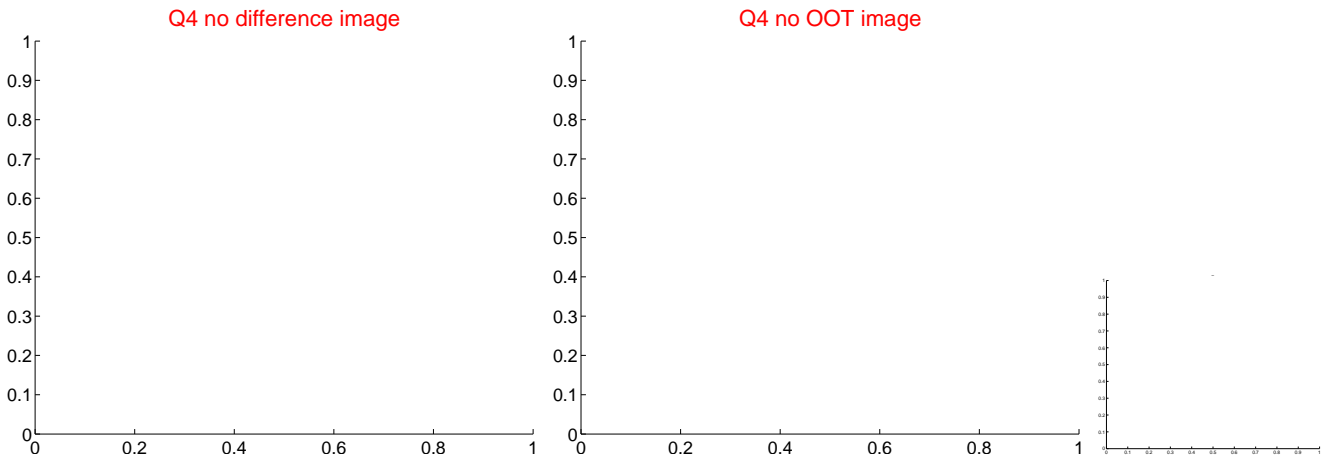
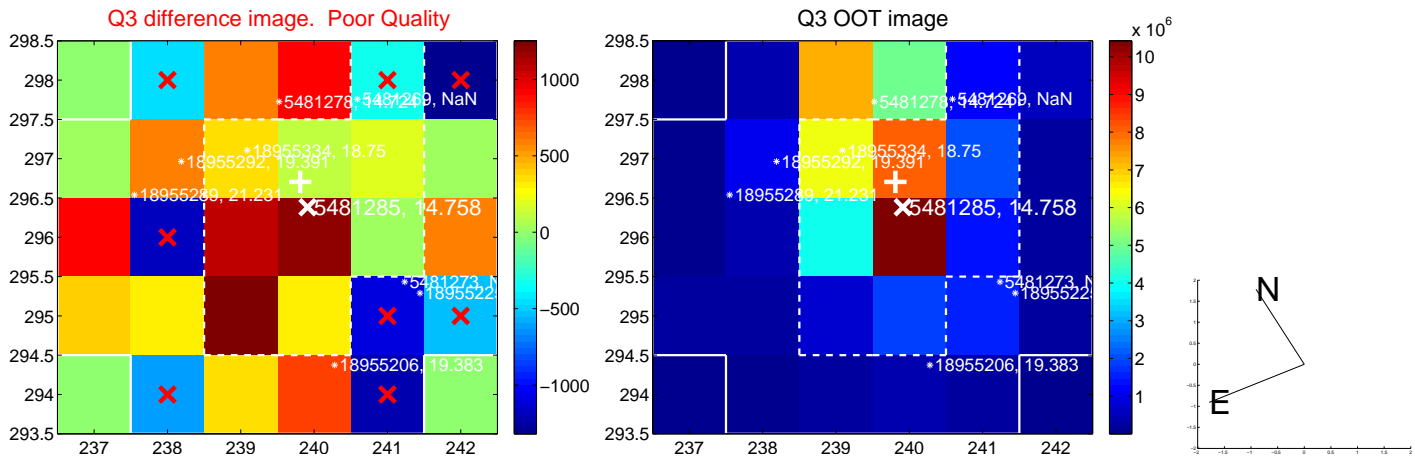
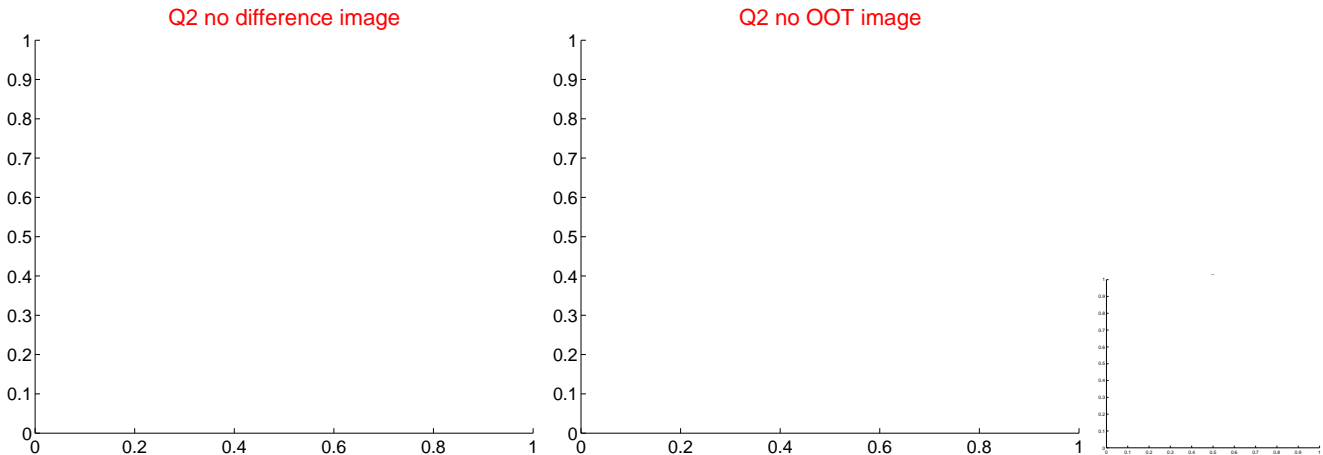
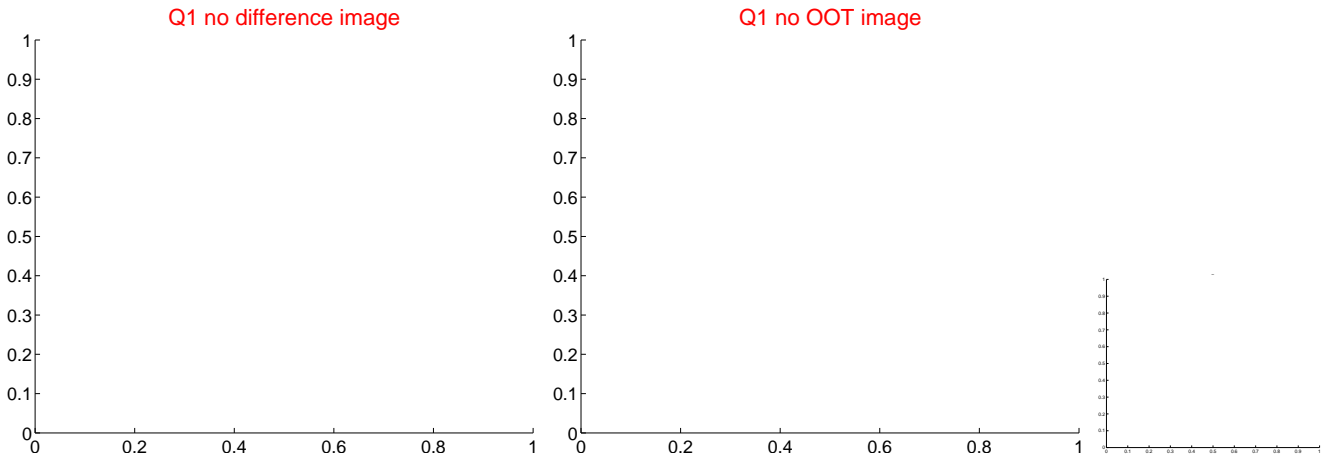


offset from photometric centroids



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value

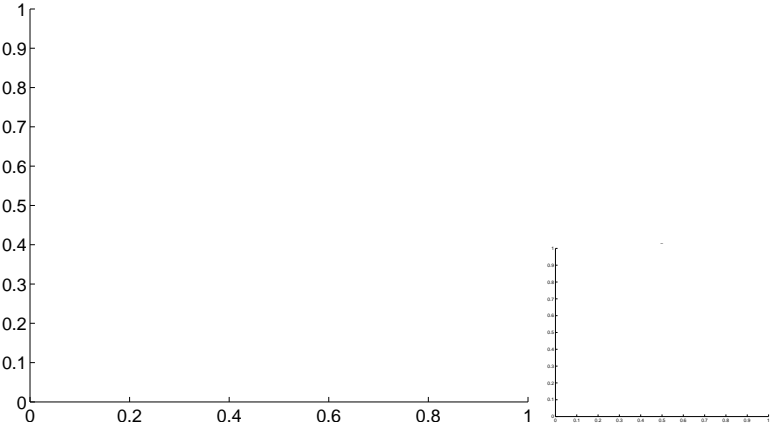


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

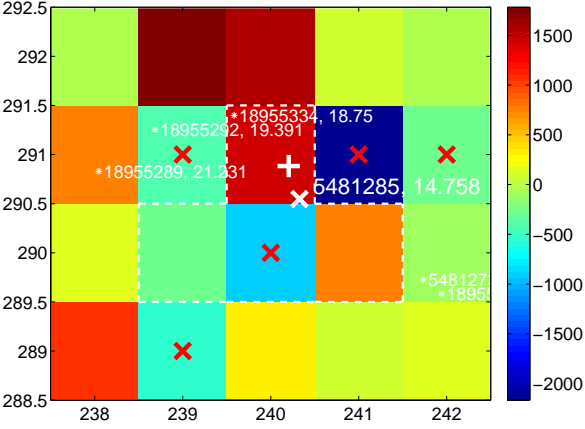
Q5 no difference image



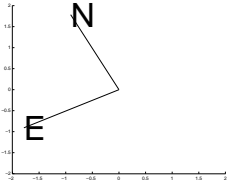
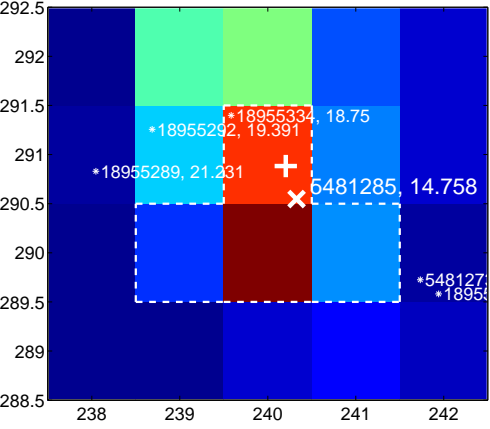
Q5 no OOT image



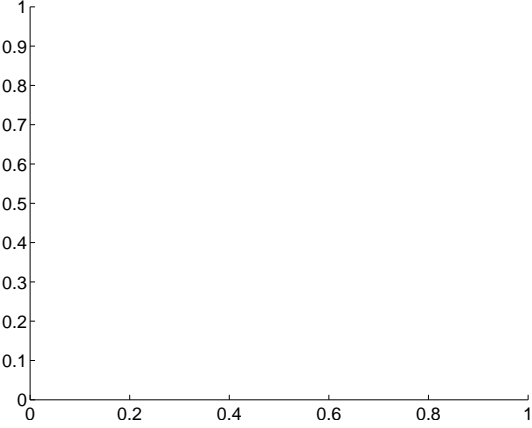
Q6 difference image. Poor Quality



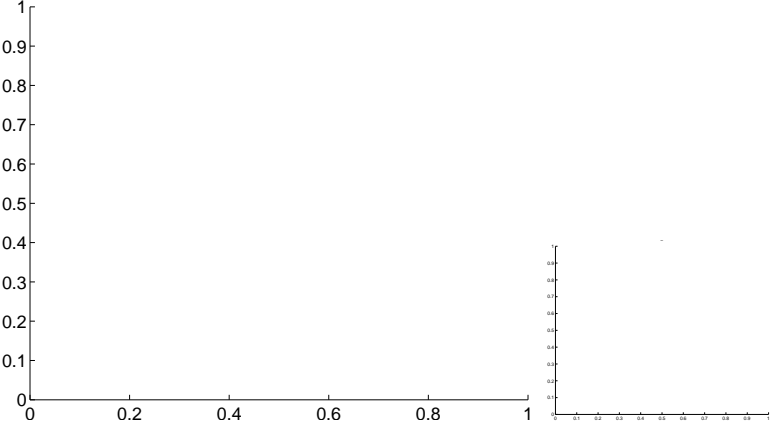
Q6 OOT image



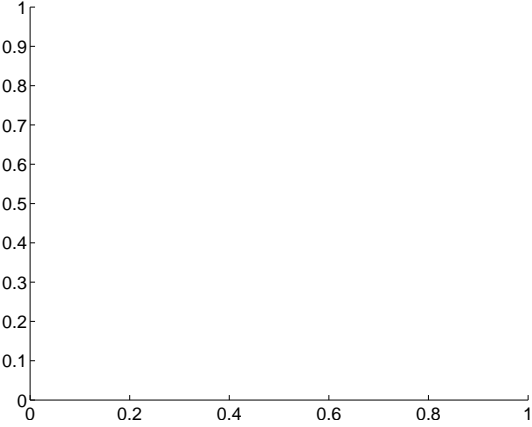
Q7 no difference image



Q7 no OOT image



Q8 no difference image

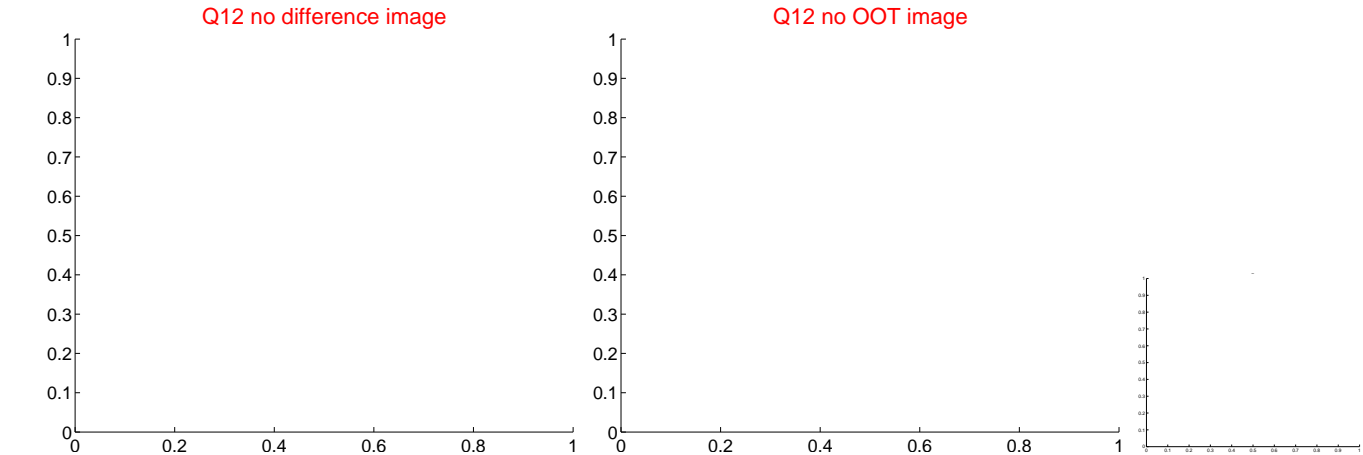
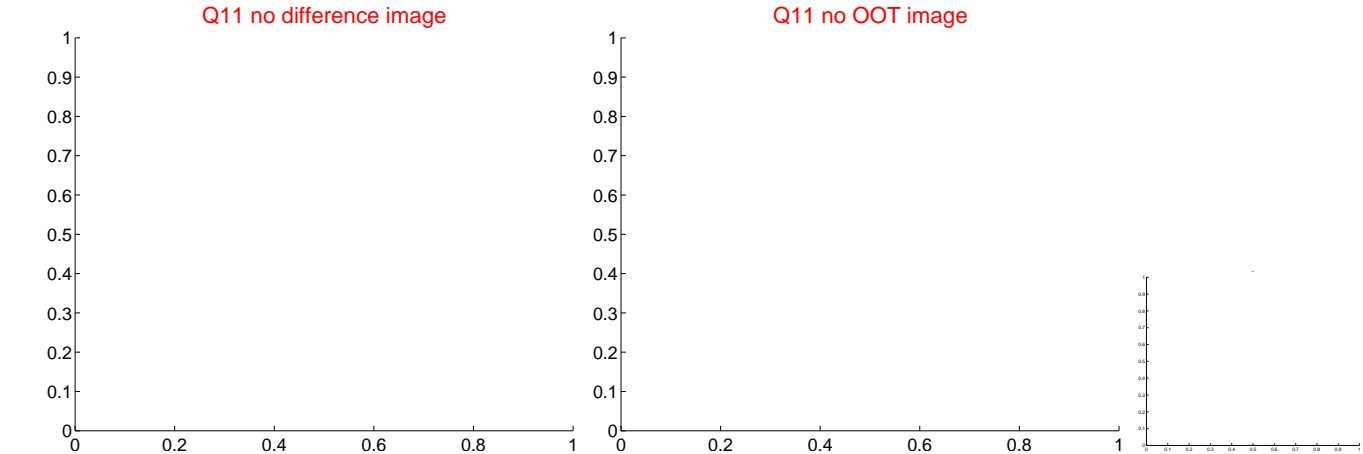
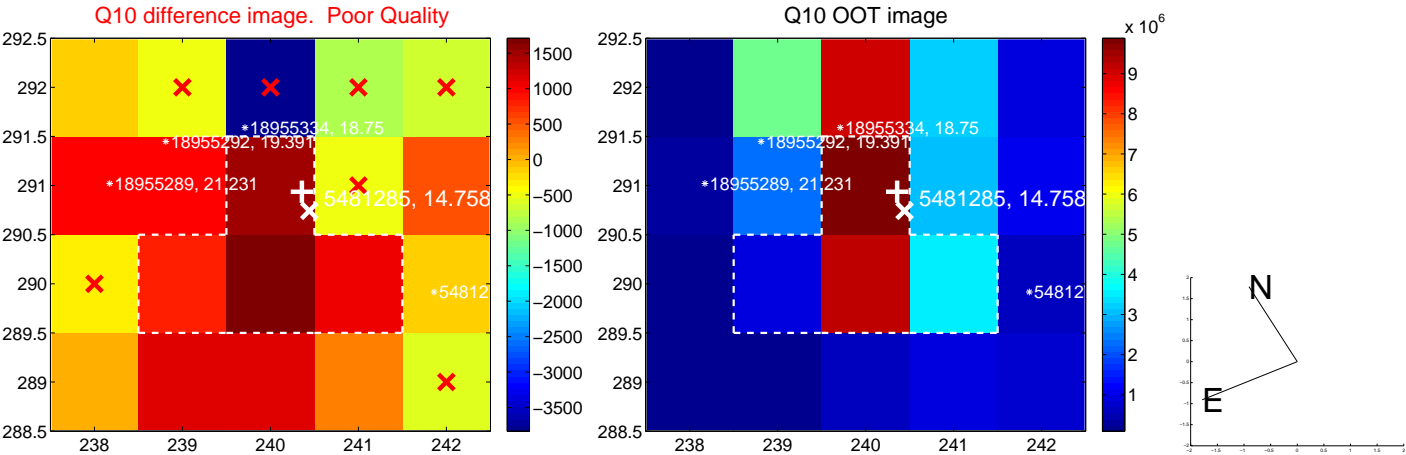
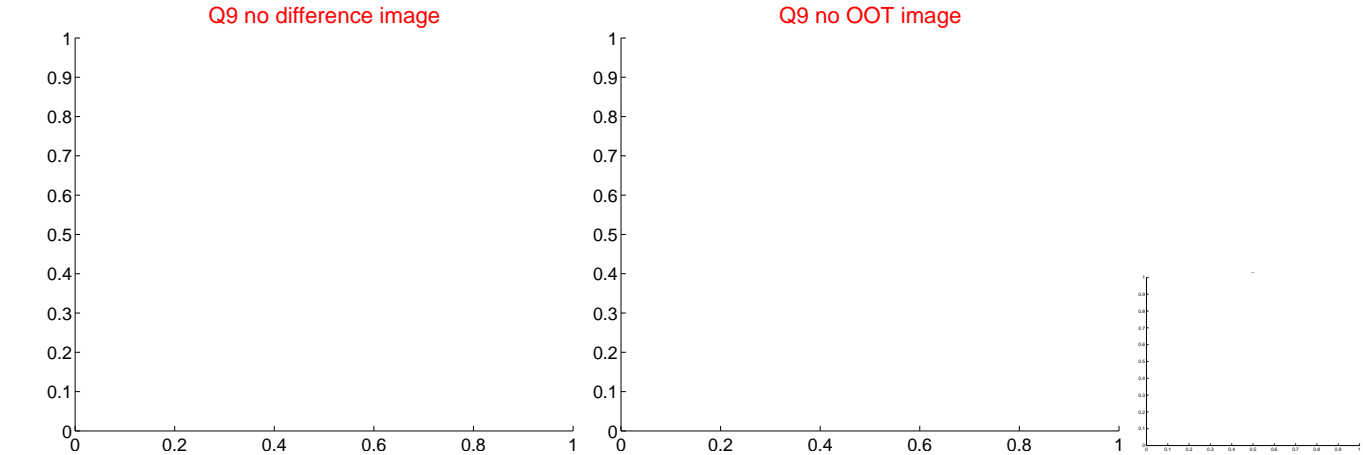


Q8 no OOT image

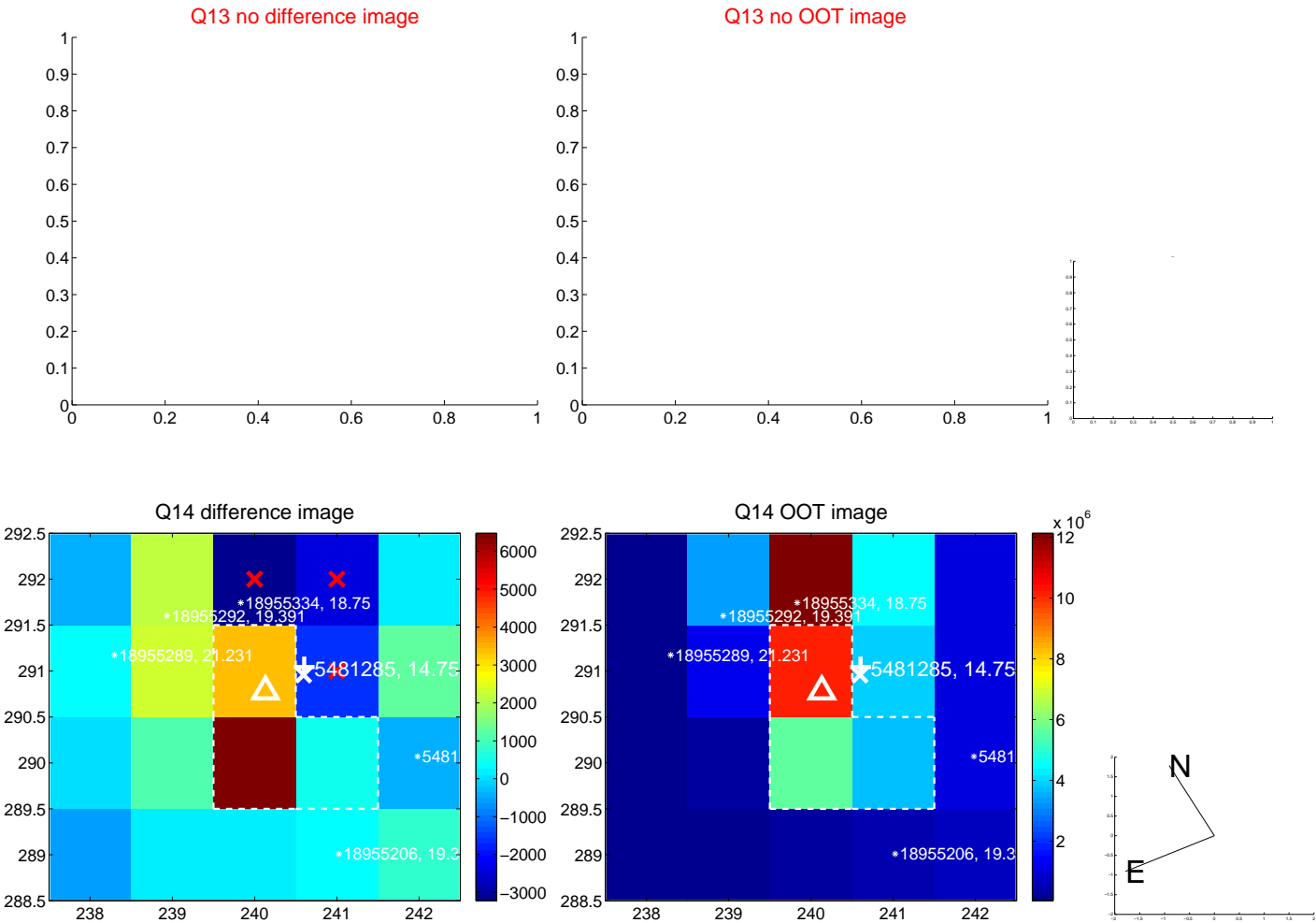




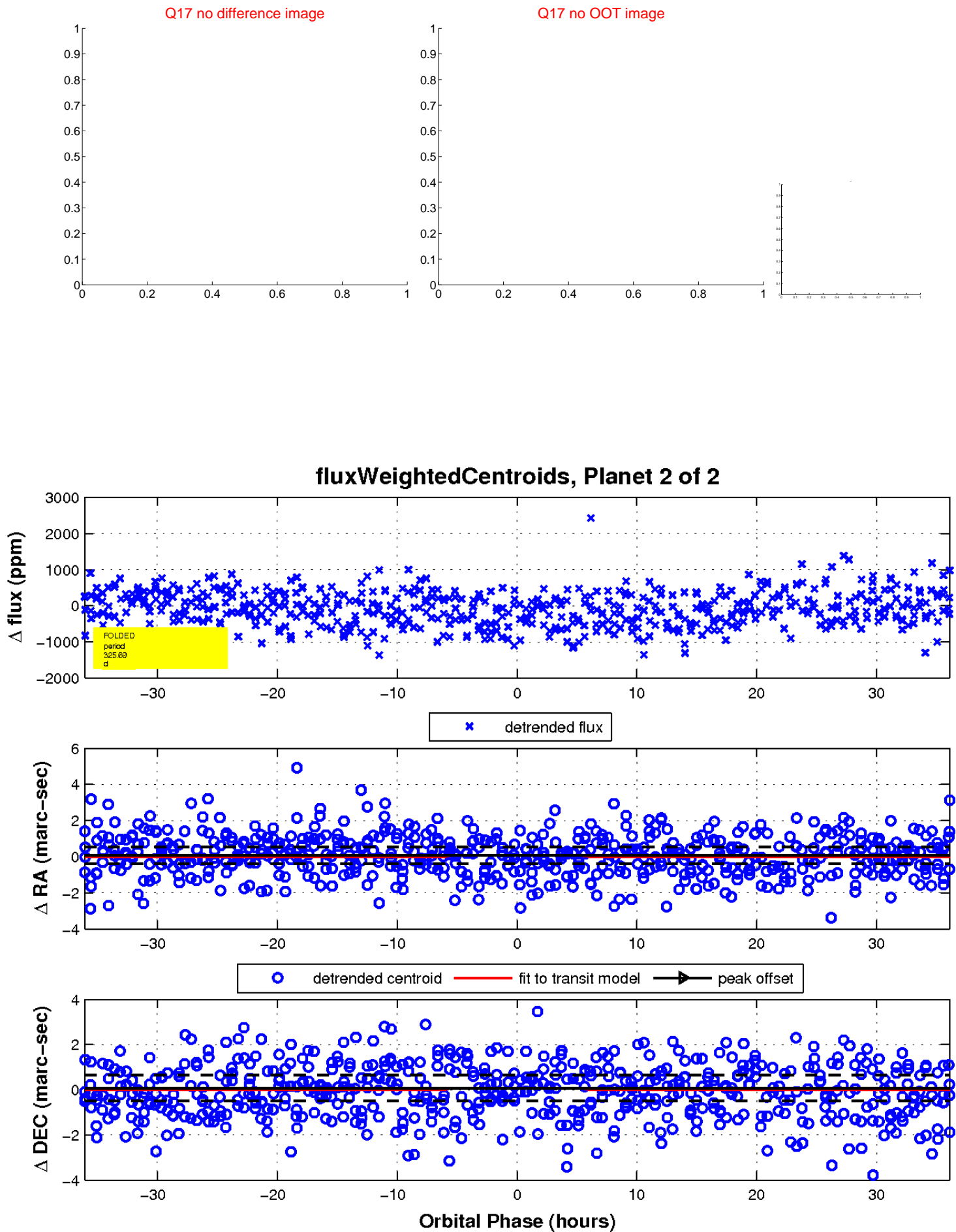
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

